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ON JALAP RESIN AND JALAPIN.

By John M. Maisch.

Read before the Pennsylvania Pharmaceutical Association, June 16.

Active principles or characteristic constituents isolated from plants are usually designated by names derived either from the generic or specific botanical name of the plant; in some cases it has been found more convenient to start from the popular name by which the plant or its useful part is known, either in its native country, or in the country in which the investigation has been made. The same rule holds also good for pharmacopœial and other medicinal drugs. If we apply this rule to the tuberous jalap root of Mexico, we have, in the first place, the officinal names *Jalapa* and *Radix jalapæ*, or *Tubera jalapæ*, by which it has been admitted into the different pharmacopœias, and, on the other hand, quite a number of botanical names have been given to the plant, which is Convolvulus officinalis, *Pelletan*, Conv. Jalapa, *Schiede*, (not *Lin.*), Conv. Purga, *Wenderoth*, Ipomœa Purga, *Hayne*, Ip. Jalapa, *Nuttall*, (not *Pursh*), Ip. Schiedeana, *Zuccarini*, Exogonium Purga, *Bentham*, and Exog. Jalapa, *Baillon*. The drug is known in Mexico as *purga*, also as *limoncillo* and *jalapa hembra*, or female jalap. The most characteristic name for the chief medicinal principle of this drug would evidently be *jalapin*, while *purgin* derived from the Mexican vernacular is obviously unsuitable. The former name has been used for the decolorized resin in older medical and pharmaceutical works, and is occasionally still met with for the so-called resinoid, which is simply the resin, more or less purified by washing with water, by repeated precipitation from alcohol, or by treatment of its alcoholic solution with animal charcoal. In chemistry, however, jalapin is a totally different, though an analogous compound.

Hume applied the name *jalapine* to a supposed alkaloid (*Med. and Phys. Jour.*, April 1824, p. 346). I was unable to consult the original paper; but in Buchner's Repertorium xxxvii, 204, it is stated that this principle was prepared by exhausting the root with concentrated acetic acid and precipitating the liquid with ammonia; the white substance was totally insoluble in ether, but dissolved readily in alcohol. Meylink, (*B. Rep.* xxxii, 446), could not obtain it in crystals. Subsequently Schweinsberg (*Magaz. f. Phar.*,) thought the precipitate consisted of ammonio-magnesium phosphate with a little calcium phosphate; but Dulk, (Berl. Jahrb. 1825, xxvii,) showed it to be resin combined, as he supposed, with acetic acid; more properly speaking it is contaminated with acetic acid, some of which is persistently retained.

A communication from Van Mons, in 1826, who had endeavored to decolorize resin of jalap by treating its alcoholic solution with gaseous chlorine, gave J. Pelletier, (*Jour. de Phar.*, 1826, xii, 143,) an opportunity to refer to his long continued researches, undertaken for the purpose of isolating from jalap root a purgative principle distinct from the resin; these researches were unsuccessful, and the investigation of this important subject was stated by Pelletier to be connected with great difficulties.

About the same time T. W. C. Martius ascertained (*Kastner's Archiv*, 1826, vi, 286), and soon afterwards L. A. Planche confirmed the observation (*Jour. de Phar.* 1827, xiii, 167), that jalap resin may be completely decolorized by treatment with animal charcoal, without depreciating its purgative properties; the latter obtained similar results also with two other hydragogue cathartic convolvulaceous resins, those of scammony, and of the herb of Convolvulus Soldanella, *Lin.* A modification of the process for decolorizing jalap resin, was published by Martius in 1835, (*Buch. Rep.* li, 367).

In 1831, A. Buchner and J. E. Herberger announced (*Buch. Rep.* xxxvii., 203–212) the isolation of the supposed alkaloid jalapine by dissolving the brownish-yellow resin of jalap in alcohol, and precipitating an acid with lead acetate, after which water would precipitate subacetate of jalapine; by treatment with a little sulphuric acid, and subsequently with lead hydrate, the supposed alkaloid was obtained as a colorless transparent mass, pulverizable, totally insoluble in ether, soluble in alcohol, also in concentrated acetic acid, and less freely in strong mineral acids, usually with decomposition. The lead compound precipi-

tated from the resin on being treated with H_2S, yielded a brown mass, which was readily soluble in alkalies, also in ether and in acids. This acid and the jalapine were regarded as uniting to a subsalt, and thus constituting the natural resin.

While examining scammony, Clamor Marquart noticed in 1836, (*Archiv d. Phar.* lvii, 236,) that in certain solutions precipitates were obtained with tannin; likewise in certain solutions of jalap resin, and the presence of alkaloids was inferred in both products.

The elementary analysis of jalap resin made by Johnston in 1839 (*Philos. Trans.* ii, 342) proved the presence of C, H and O, and the absence of nitrogen. A similar result had already been obtained by O. F. Goebel in 1821 (*Buch. Rep.* xi, 84.)

Cadet de Gassicourt first observed (*Jour. de Phar.*, 1817, iii) that jalap resin may be separated by means of ether into two portions; one hard and resin-like, insoluble in ether, soluble in warm alkalies and from these solutions not precipitated, or merely very slightly so, on the addition of a mineral acid; the other portion soft, plaster-like, soluble in ether, and likewise in warm alkalies, but from the latter solution precipitated by acids in the same manner as the crude resin. It is the portion insoluble in ether which was subsequently called jalapine by Hume, Buchner and Herberger, though by them erroneously supposed to be an alkaloid.

The insolubility of the hard and soft portion of jalap resin in oil of turpentine appears to have been first noticed by Trommsdorff (*Neues Jour. d. Phar.*, 1833, xxv) and was by him and others recommended as a convenient test for proving the absence of agaric resin, colophony and others, with which jalap resin was sometimes adulterated. Bley afterwards found (1839, *Buch. Rep.* Lxv, 374) that ordinary oil of turpentine would dissolve a little jalap resin, but the freshly rectified oil take up merely a trace of the latter.

During his investigations of the resins of jalap and orizaba root, (1844, *Annalen* li, 81) G. A. Kayser observed their solubility in strong sulphuric acid with the production of a red color, and regarding this reaction as characteristic introduced the names *rhodeoretin* and *pararhodeoretin*, the former for the hard, white, in ether insoluble resin of tuberous jalap, the latter for the similar, but in ether soluble, resin of fusiform jalap. Kayser proved also that the resins, which have a neutral reaction on litmus, on being dissolved in warm alkalies, are converted into acids soluble in water. The ether-soluble resin of tuberous jalap

has, however, an acid reaction and retains the peculiar odor and acrid taste of jalap. B. Sandrock (1850, Arch. d. Phar. cxiv, 160) obtained it of a yellow color, soft, tough, not becoming hard and brittle on drying, precipitated by lead acetate, soluble in alkalies and after prolonged boiling of this solution converted into a peculiar acid somewhat soluble in water. He named this soft resin "gamma-resin," and regarded the ether-insoluble resin as consisting of "alpha-" and "beta-resin," which, however, were soon shown to be not materially distinct. Pereira (*Mat. Med.*, Amer. edit. 1854, p. 520) retained for this resin the name jalapin, and called jalapic acid the portion soluble in ether.

F. Holl (1846, *Arch. d. Phar.*, xcviii, 45.) and others had shown that the color reaction observed by Kayser with sulphuric acid is by no means characteristic for the jalap resins, but in his first researches Wm. Mayer retained (1852, *Annalen*, lxxxii, 121) the name rhodeoretin, until after having extended them to the resin of fusiform jalap (1856, *Annalen*, xcv, 129), he very unfortunately adopted for the pure resin of the latter the name *jalapin*, while the ether-insoluble resin of tuberous jalap which is the most important active principle of this drug, was designated *convolvulin*. The ether-soluble resin accompanying the latter was not investigated by Mayer. The pure resin of scammony, at first called *scammonin*, was through the researches of F. Keller and H. Spirgatis (1857–1860, *Annalen*, civ, 63; cix 209; cxvi, 289; *Buch. N. Rep.*, vii, 9, 511) shown to be identical with the jalapin of the orizaba root.

It is very difficult, if not impossible, to ascertain now by whom the name jalapin was first applied to the soft resin of true jalap, with which Mayer's jalapin has nothing in common except the solubility in ether; but it is thus designated in several English, French and German works. The confusion is thereby increased, for the name jalapin which was originally given to the ether-insoluble resin of true jalap root, is now occasionally applied to the more or less decolorized natural resin of jalap, the greater portion of which is insoluble in ether; 2., to the ether-soluble portion of this resin, soft at ordinary temperature, readily fusible and not becoming brittle even after prolonged exposure to a heat of 100° C.; and 3., to the pure white resin of Orizaba jalap and of scammony, brittle at ordinary temperature, and melting at about 150° C.

In answer to the question as to what is sold commercially as jalapin, attention may be drawn to a paper recently published in *Phar. Jour. and Trans.*, Feb. 12, 1887, pp. 650–652 in which eight samples were

examined, one of which was completely soluble in ether, and consisted either of Mayer's jalapin or of tampicin, the resin of Tampico jalap which however has a lower fusing point than the former, namely about 130° C. The other samples, seven in number, were evidently resins of true jalap and yielded between 3·5 and 7·3 per cent of ether-soluble resin, which, though stiff and tenacious, and incapable of being rendered quite hard, was considered to be identical with jalapin; its solubility in warm ammonia was not ascertained.

"Jalapin" does not appear to be often prescribed in the United States; still it was not difficult to procure under this name two entirely distinct articles, one of which, being of German manufacture, answered to the characters of Mayer's jalapin in being soluble in ether, while the other yielded to ether 3.3 per cent. of a soft brown resin, which had an acid reaction and was suluble in warm potassa solution and reprecipitated by excess of acid; warmed with ammonia a milky emulsion-like mixture was obtained, but not a clear solution. This soft resin was dissolved in absolute alcohol, for several days treated with animal charcoal, and the filtrate evaporated, when a soft brownish yellow mass was left, neutral in reaction, leaving no residue when ignited, and giving with warm ammonia a milky mixture. A second and third treatment with somewhat weaker alcohol, and excess of animal charcoal, diminished the quantity of this soft mass very considerably, but without materially altering its characters. After a fourth treatment, only a minute quantity of it was left, the properties being unaltered. It follows from these results that this ether-soluble portion is entirely distinct from Mayer's jalapin; in fact, its resinous nature appears to be quite doubtful, and it seems to me more nearly related to the fats and waxes, and to be absorbed from its solution by a large quantity of animal charcoal.

In 1854 Prof. L. A. Buchner (*N. Rep.*, iii, 22; *Amer. Jour. Phar.*, 1854, p. 446) reported that the ether-soluble portion of jalap resin behaves like rhodeoretin (or convolvulin) with alkalies; for if resin of jalap be dissolved in warm potassa solution, and the liquid supersaturated with an acid, either no change takes place or only an opalescence without real precipitation, according to whether the resin had been decolorized by animal charcoal or not.

A somewhat analogous observation has more recently been published by Prof. Flückiger (*Phar. Zeitung*, 1883, p. 211), according to which resin of jalap decolorized by animal charcoal is dissolved by

warm ammonia water and not reprecipitated by acids. The explanation of this behavior, it appears to me, is to be found in the removal, by the charcoal, not only of coloring matter, but also of that substance in jalap resin which is soluble in ether.

The second sample of jalapin, to which I referred above, did not essentially differ from the pharmacopœial resin of jalap, except that it was lighter in color, and was sold at about three times the price of the latter.

Now, considering the confusion in regard to the term "jalapin," it appears to be extremely desirable to abandon it altogether, in pharmacy and in chemistry, and to likewise abandon the term "convolvulin" as not sufficiently characteristic. The ether-insoluble resin of true jalap may be very appropriately called *jalapurgin*, which indicates the origin of the principle as well as its medical properties; the ether-soluble portion, however, is (at least in its crude state) a mixture, and does not deserve a distinctive name until fully investigated. On the other hand, the ether-soluble resin of fusiform jalap, to denote its origin, should be called *orizabin*, which, on account of its identity with the resin of scammony, would be synonymous with *scammonin*.

It may be stated yet that my present experiments agree very well with those made in previous years, when I ascertained that the ether-soluble resin of jalap, after being treated with animal charcoal, is not white, but brownish-yellow; is not brittle, but sticky, and dissolves in warm potassa to a slightly opalescent solution, which becomes milky on the addition of an acid. Still it is possible that the results may vary to a certain extent, since the amount of ether-soluble matter has been found to vary from between 3 and 4 per cent. to about 12 per cent. of the total pharmacopœial resin.

Whether the introduction into medicine or into the pharmacopœia of a pure "jalapurgin" is desirable, appears to be doubtful; for according to the investigations of Dr. W. Bernatzik, (*Zeitschr. d. k. k. Gesellsch. d. Aerzte in Wien*, 1862, 1863; *Buch. N. Rep.* 1864, xii, 451-467,) about equal purgative effects are obtained with 0·17 gm. of pharmacopœial resin of jalap, 0·216 gm. pure convolvulin, and 0·50 gm. of soft jalap resin (the ether-soluble part).

Two samples of jalap resin recently examined by me yielded respectively, 3·01 and 4·8 per cent. to ether; in neither case was the exhaustion complete, but very nearly so. A good plan for treating jalap resin with ether is that followed by E. White (*loc. cit.*), mixing with

about three times its bulk of sand, and percolating with ether; the operation is tedious, the last portions of the substance being with difficulty removed. Another method is solution of the resin in a small quantity of warm alcohol and precipitation by ether gradually added; a considerable quantity of the latter is required for precipitating the last portions of the ether-insoluble resin, and it will be found advantageous to evaporate the ether solution, re-dissolve the residue in little alcohol, precipitating again by ether, and to repeat this operation several times.

Should a lighter colored resin of jalap than the present one be desirable, and there are good reasons for the admission of such a product—the process originally suggested by L. A. Planche (*Bull. de Phar.* 1814, vi, 26), and variously modified by later writers would probably be preferable to the pharmacopœial process. Without entering into details, the following references to observations on this subject may be of interest: Ilisch (N. J. iii 2; Buch. Rep. 1824, xviii, 210), Thiele (B. Rep. 1826, xxiii, 306), Gummi (ibid., 1827, xxvi, 106), Wolf (ibid., 1828, xxix, 372), Torosiewitz (ibid., p. 384), Raab (ibid., 1832, xlii, 143), Buchner (ibid., 1834, xlix, 252), Martius (ibid. 1835, li, 363, 367), Geiseler (Arch. Phar. 1836 lxiii, 221), Mouchon (Jour. Chim. méd. 1837, p. 382), Nativelle (Jour. Phar. Chim. 1842 [3] i. 228) and others. It may be briefly stated that in these processes the jalap-root, either unbroken, or in small pieces, or in powder, is first exhausted by water, either cold or hot; the drug is then drained and while still wet or after having been previously dried, exhausted with either cold or warm alcohol; the tincture is concentrated and the residue washed with water. In some cases the material exhausted by water is directed to be mixed with animal charcoal and then treated with alcohol. Emile Mouchon avoided the treatment of the root with water, but mixed the powder with 1½ times its weight of animal charcoal, displaced this mixture with alcohol, and precipitated the concentrated tincture with water.

It will be observed that numerous processes may be devised for obtaining jalap resin white, or nearly white, or at least much lighter in color than the present pharmacopœial resina jalapæ.

Aniline is recommended by Dr. Kremjansky, of Charkow, for destroying the bacilli of phthisis; he proposes the use of atomized aniline, in connection with inhalations of fresh air and of oils of turpentine, anise and eucalyptus.—*Br. Med. Jour.*

ON THE USE OF WEIGHTS AND MEASURES IN LIQUID PREPARATIONS.

By Prof. Jos. P. Remington.

Read before the Pennsylvania Pharmaceutical Association, June 16.

What advantages would be gained by extending the system now officinal for fluid extracts, to all the liquid preparations of the Pharmacopœia? That is, to substitute the gramme and cubic-centimetre for parts by weight.

To the majority of pharmacists who have received their pharmaceutical education in America the principle of expressing quantities in officinal formulæ in parts by weight was comparatively unknown until 1882, when the United States Pharmacopœia (1880) was first issued; it is true that the Pharmacopœial Convention of 1870 directed its Committee of Revision to express their formulæ in weights and parts by weight, but the 1870 committee, by a unanimous vote, took the bold step of disregarding the directions of the convention, and the U. S. Pharmacopœia of 1870 appeared with the quantities expressed, mainly in troy and fluidounces. For this action, the committee suffered condemnation at the hands of those who favored the method used in Continental Europe, and when in 1880 the Pharmacopœial Convention reaffirmed the judgment of the Convention of 1870, and ordered its committee to use parts by weight in expressing all formulæ, it was felt that the command could not be disregarded, although the individual opinion of the members was not united on the subject.

The Committee of the American Pharmaceutical Association on the United States Pharmacopœia, who presented a valuable report in 1878, carefully outlined the leading principles which should guide the final Committee of Revision, and "parts by weight" constituted the "chief innovation." Yet this report was unanimously adopted by the American Pharmaceutical Association, and eventually became the skeleton of the Pharmacopœia of 1880, for all of its leading principles were adopted by the Pharmacopœial Convention of 1880. It will thus be seen that "parts by weight" came legitimately and naturally into our last Pharmacopœia, and whatever doubts were held by some of the members of the committee as to the merits of the system, it cannot be said that full time and consideration were not given to the subject, and time alone could be trusted to prove whether upon fair trial it would survive or fall.

It would be beyond the scope of this paper to enter into all of the arguments *pro and con* upon this very important subject; for much

more time and labor have been spent in discussing "parts by weight" since the issue of the Pharmacopœia than before. Yet it needs very little time to prove that after five years' trial before the country the "consensus of pharmaceutical opinion" is greatly in favor of *weighing solids and measuring liquids.*

That there are advantages in the system adopted in the Pharmacopœia, no one can gainsay; the operator can choose from the formula whatever denomination he desires and by substitution for parts he can use grammes, drachms, grains, scruples, pounds, kilogrammes, or any other weights. The adoption of the centesimal ratio of expressing the proportions of the ingredients, whilst not necessary to the success of the principle of using parts by weight, was rendered desirable in view of the anticipated use of the metric system, and so the method adopted in the Pharmacopœia undoubtedly favored the use of the gramme and its multiples, because the multiplication and division were effected by decimals. There are many operations in the laboratory, which are more conveniently performed by weighing the liquids; for instance in making a barrel of soap liniment, it is very convenient, and usually more accurate to roll the barrel on the platform scales, tare it, and to pour the liquids in successively until the proper weight is indicated, and after adding the solids and inserting the bung, the barrel may be rolled backward and forward until solution is effected. Then again in the case of adhesive, corrosive or acid liquids, it is far more convenient to weigh them than to use measures. But it must be remembered that the vast majority of those who employ the pharmacopœia use fluid-ounces and not gallons or barrels as their units, whilst the few adhesive, corrosive, or acid liquids that must be mixed together, constitute a small class which may properly form exceptions to the rule.

Where small quantities of liquids are concerned, it cannot be denied that graduated measures still continue to be used to as large an extent as ever, and so long as physicians continue to prescribe liquids by measure and administer them in teaspoons and tablespoons, just so long will graduated measures be employed, and it would be illogical and useless to expect prescriptions to be compounded by weight unless convincing arguments can be presented to prove the greater convenience and accuracy of weighing liquids. Now, so far as convenience and practicability are concerned, it must be admitted that the glass graduated measure maintains its supremacy; and as to accuracy, it has been well contended that there is just as much liability to

error in weighing liquids as in measuring them; in fact, the question of accuracy on either side resolves itself into a personal equation, and a careless operator will be just as likely to be loose and slovenly in using his weights as he would in filling his graduate. But it has been urged that liquids change their volume according to their temperature—heat expanding them and cold contracting them—and hence an ounce of liquid measured in the winter time will be greater than one measured in the summer time. This is a physical fact that cannot be gainsayed, yet it must be admitted that the amount of variation is trifling and, when we regard the present methods of administering medicines, unworthy of consideration.

The plea of greater accuracy in making liquid pharmaceutical preparations when they are weighed, receives a severe practical check when we reflect that a large proportion of the analytical chemists of to-day rightly use volumetric estimation in their every-day work. Now, if these conspicuous apostles of accuracy, who have done so much to aid the sciences of chemistry and pharmacy, cheerfully disregard the variations due to change in volume by expansion and contraction in their standard solutions, and yet be able to make trustworthy analyses, so that they are willing to depend upon the number of cubic centimetres of test solution which drop from their burettes to their beakers, how utterly insignificant does this variation appear when applied to the work of the pharmacist, for he makes tinctures, fluid extracts and syrups which are to drop or pour from bottles or teaspoons into stomachs containing more or less digested dinners.

Then again if the plea of greater accuracy in favor of weighing pharmaceutical liquids is to be effective, a number of far more important questions must be considered and met. The galenical preparations of to-day vary in strength for several reasons, drugs contain different amounts of moisture and no hygroscopic standard has ever been determined upon; this variation can easily amount to ten per cent. The quality of the drug used in these preparations except in one or two cases is at present determined by the conscience and character of the operator, no officinal standard having been adopted, and it is doubtful if reliable methods of fixing standards for all galenical preparations can ever be developed. In view of these facts does it not appear that the system of measuring liquids, particularly if standard measures are carefully used, is far more convenient, practical, and useful for the retail pharmacist than that of weighing?

The advantages that would be gained by substituting the use of the gramme and cubic-centimetre for "parts by weight" are those which belong then to the use of "solids by weight and liquids by measure," and although this change would be in the writer's opinion a great improvement, there seems to be so much opposition to the use of the metric system in this country that it is very doubtful at this time whether the gramme and cubic centimetre could be adopted with a reasonable chance of its universal use without legislative aid; and even then its success would be problematical. The metric system is undoubtedly the most simple, comprehensive and beautiful system that has ever been devised, and if its one great defect of binary divisions and subdivisions could be overcome, its inherent advantages would be so apparent that pharmacists everywhere would be glad to adopt it for its intrinsic worth; but even with this defect it is, in the writer's opinion, greatly to be preferred (if the measures are used) for pharmaceutical practice than parts by weight.

CARMINE SOLUTION.

By Joseph W. England, Ph. G.

Read before the Pennsylvania Pharmaceutical Association, June 16.

As a rich, deep red coloring agent for various elixirs, syrups and mixtures, cochineal, or its more concentrated representative—carmine, probably stands unequalled by any other, in popular favor and usage, but there are several features in connection with its use, that seriously interfere with and restrict its more general employment, and these are, that the various solutions, as generally made, are either too weak in the quantity of their dissolved carmine, or unstable or, if made strong, they contain such an excess of ammonia water or potassium carbonate, that their addition, as colorants, to alkaloidal solutions is contraindicated through their well known precipitating influence upon alkaloids. Again, more especially in concentrated solutions where water of ammonia is used as a solvent, the gradual evaporation of the dissolved ammonia gas, on exposure to air, is accompanied by deep turbidity of the transparent solution, gradual deposition of precipitated carmine, followed, on standing, by decomposition. Lastly, as a further objection, solutions of carmine in alkalies, do not give the true shade of carmine, but a violet or purplish red, essentially distinct from that characteristic red color.

The true chemical constitution of carmine, in the present state of knowledge, is shrouded in considerable doubt, although it has been made the subject of repeated analyses ever since Pelletier and Caventon first examined it in 1818. One of the latest and most satisfactory researches has been made by Messrs. Will and Leymann[1], who dissolved pure carmine red in 50 per cent. acetic acid and boiled it with an excess of bromine, whereby colorless needles of $C_{10}H_4Br_4O_3$ were obtained. The acetic acid mother-liquor, on dilution with water, yielded yellow amorphous floccules which, boiled with KHO, gave a red pulverulent salt, the crystalline acid of which, when liberated, gave the formula $C_{11}H_5Br_3O_4$. It exhibited no tinctorial properties, but all its salts were strongly colored. Further, on treating the alkali solution with stannous chloride and supersaturating with HCl, ether extracted a substance, the solution of which, on exposure to air, acquired a color similar to that of a cochineal solution and, like the latter, became violet red on the addition of an alkali. The products obtained by these investigations may be summed up as having the formula $C_{10}H_8O_3$, a colorless acid, capable of forming colored salts, as $C_{11}H_8O_4$, and a readily oxidizable chromogene whose constitution is unknown.

Let us, for a moment, following Dechan, briefly review the results of earlier investigators and see how widely they differ from each other. De la Rue[2] first gave as the formula of carminic acid $C_{14}H_{14}O_8$. This was denied by Schutzenberger, who claimed that De la Rue had been experimenting with a mixture of several substances, and that the true formula of this acid was $C_9H_8O_5$. Again, Schaller obtained results which differed from these by H_2O, and expressed the opinion, that the acid was dibasic and capable, therefore, of forming both acid and normal salts. Hlasiwetz and Grabowsky[3] came to the conclusion that the carminic acid of previous investigators was a glucoside for, on treating it with boiling dilute sulphuric acid, it was found to yield a peculiar kind of sugar and a substance they called carmine red. Their formula was $C_{11}H_{12}O_7$. Dechan[4] instituted experiments for the purpose of determining whether carmine could be prepared without the use of alum or tin spirits and very clearly established the fact, that either of the bases, aluminium or tin, were essential for its production. Hence,

[1] Ber. D. Chem. Ges., 1885 p. 3180–3193; Am. Jour. Phar., 1886, p. 91.
[2] Gmelin, xiii p. 358.
[3] Jour. de Pharm., Sept., 1866; A. J. P. 1866, p. 504.
[4] Pharm. Jour. and Trans., Dec. 12, 1885; A. J. P., 1886, p. 30.

it may be inferred that commercial carmine is mainly a tin or aluminium salt of an acid glucoside. Further, Dechan found that all aluminium or tin compounds of cochineal, are readily soluble in dilute ammonia, whereas the substances, with which it is liable to be adulterated, as, for example, vermilion, chrome red, starch, uncombined alumina, etc., are, as a rule, not soluble in that menstruum. Liebermann[1] found that pure cochineal carmine is not entirely soluble in alcohol and water; water dissolves it sparingly, alcohol considerably. Instead of containing only traces of alumina and lime, as is usually supposed, he found as high as 8 per cent.

Some months ago, I commenced a series of experiments upon carmine and its solvents, in order to obtain, if possible, some practicable process not open to the objections previously mentioned, whereby a more stable, concentrated and thoroughly representative product could be secured. Suffice it to say, that the result has been obtained and I present, for your inspection, a sample of the solution made over two weeks ago. The following is the formula:

Carmine (No. 40.)	℥ iv.
Water of ammonia	f℥ iii.
Glycerin,	f℥ iii.
Water, q. s.	ad f℥ viii.

Rub the carmine into a fine powder, in a wedgwood mortar, make a paste with and dissolve in the water of ammonia and then add, with constant trituration, the glycerin. Transfer to a porcelain capsule, and heat upon a water-bath, until the liquid is entirely destitute of ammoniacal odor, cool and add the water. The entire removal of the ammonia gas, requires the constant stirring of the liquid, with a glass rod, and rather lengthy heating.

The finished product is a permanent deep, ruby-red liquid, perfectly transparent, destitute of ammoniacal odor and mixes, without turbidity, with all aqueous solutions. It should develop no precipitate with mercuric chloride, indicating the absence of free ammonia; and on the addition of AmHO should acquire a purplish tinge. It gives the true carmine color to solutions without exhibiting the purplish tinge so characteristic of alkaline solutions. 30 to 60 drops to a pint of liquid are sufficient to color, but the depth of color may be varied to suit individual tastes.

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[1] Rundschau, No. 52. p. 835; A. J. P. 1886, p. 102.

PHARMACEUTICAL NOTES.

(Abstracts from Theses.)

Fluid extract of scutellaria, as seen in the shops usually has a certain amount of precipitate. Edward Pennock, Ph. G., states that the formation of this precipitate may be prevented or considerably lessened by using a menstruum containing 5 per cent. of glycerin; the percentage of alcohol is not stated.

Distilled water of witchhazel.—John Keifer, Ph. G., obtained from a large distiller in Connecticut particulars as to the manufacture of the distillate, of which the following is an outline: The twigs of hamamelis are collected with the buds in the fall and early winter, are cut into pieces from 6 to 12 inches in length, and then distilled from copper stills in the presence of water, and usually by means of steam. The first portion of the distillate is milky, subsequently it is clear. About a ton of twigs is used to produce one barrel of distillate to which is added from 5 to 7 gallons of alcohol as a preservative, a pound of the finished product representing from 6 to 8 pounds of twigs. This so-called distilled extract is clear, colorless, entirely volatile and has a somewhat pungent aromatic odor.

Myrrh-gum has been experimented with by H. E. Emerson, Ph. G. The residue of myrrh left after the preparation of the tincture, was washed with alcohol, and dried, and subsequently dissolved in one, two and four parts of water. After straining the yellowish opaque mucilage its adhesive properties were tried and found to be rather superior to gum arabic, since it causes labels to adhere tightly to glass, wood, tin, etc. Though its want of transparency detracts somewhat from its usefulness, it has the advantage of keeping unaltered for a long time.

The results corroborate those of E. B. Shuttleworth (Am. Jour. Phar., 1871 p. 369) and C. E. Escott (ibid., 1887 p. 69). Mr. Shuttleworth suggested the addition of a little molasses to the mucilage to increase its adhesive properties.

Chloral and Camphor.—A. G. Georges, Ph. G., made some investigations on the behavior of chloral hydrate and powdered camphor; it is not stated whether the latter was absolutely free from alcohol or other liquid possibly used in powdering. Triturating together one part of the camphor and two parts of chloral hydrate, a colorless syrupy liquid of 1·280 specific gravity was obtained. Using equal parts of the two substances, the density of the liquid was 1·210, and it dissolved

one-third part of camphor. The mixture of 7 parts of camphor and 3 parts of chloral is opaque, pulverizable, has the density of 1·10, and in contact with water is gradually decomposed, camphor rising to the surface and chloral hydrate entering in solution. The mixture of two parts of camphor and one part of chloral forms a partial solution, some camphor remaining undissolved, and the liquid portion will dissolve two more parts of chloral, before it is saturated with the latter. A solution of one part of chloral in (from one to) four parts of water will gradually dissolve four parts of champhor and deposit an oily liquid, which will neither mix with, nor be decomposed by, the water in which it was formed, even on heating it to the boiling point; but on the addition of more water, camphor will separate, and chloral be dissolved. (See also AMER. JOUR. PHAR. 1886 p. 282.)

Rhus glabra.—A good *ink* may be prepared from sumach leaves, according to Oscar J. Lache, Ph.G. A decoction is prepared by boiling 1 oz. of the bruised leaves for half an hour in one pint of water, and straining; 90 grains of sulphate of iron, and 60 grains of gum arabic are added. The ink has at first a brownish cast which disappears in a few days; after about two weeks it can scarcely be distinguished from ink made from nutgalls.

On evaporating an infusion of the berries hard crystals of calcium acid malate are obtained, having a red brown color; by repeated recrystallization they may be obtained clear and transparent. They are decidedly acid, and are with difficulty dissolved in cold water. The acid was prepared by Procter's process (see U. S. Disp.) On precipitating the solution of the calcium salt with acetate of lead, and decomposing the precipitate with sulphuretted hydrogen, a filtrate is obtained, which on evaporation, yields prismatic crystals of *malic acid.* The yield is from 3 to 4 per cent.

AMMONIUM IODIDE.

By R. ROTHER.

Judging merely from the simplicity of its chemical nature ammonium iodide does not appear to be the really difficult compound to prepare that it is. It does not come strictly within the province of dispensing pharmacy to operate in the direction of such products, but if time and opportunity permit it is occasionally interesting and instructive, if not economical, to indulge in such practices. Mere infer-

ence from analogy unsustained by practical experience would lead to the expectation that free ammonia reacting on free iodine generates iodide and iodate of ammonium. But in practice nothing of the kind is realized. The black insoluble compound therefrom resulting is generally a mixture of the 3 or 4 chemically possible and dangerously explosive iod-ammonias. A variety of more or less practical and efficient methods for preparing iodide of ammonium are extant. One of the chief difficulties encountered, however, in seemingly all the processes, is the occurrence of free iodine in the finished product. Some very elegant ammonium iodide is found in the market, but much of it also is not as white as it should be, whilst some of it soon becomes not only yellow but positively brown from the accumulation of free iodine. It is presumed that exposure to light primarily induces this deteriorating effect. The real root of the diffiulty, however, is due to the access and joint influence of free oxygen and moisture. When the dry discolored iodide is submitted to a moderate heat in an open vessel much of the seemingly free iodine is dissipated. But a very small proportion is persistently retained at all practically low temperatures. The pharmacopœia states that ammonium iodide when heated on platinum foil evolves free iodine, and is wholly volatilized without fusing. This is all correct enough, but such a statement is misleading, in so far that it induces the belief that ammonium iodide is readily decomposable by heat. When, however, the pure salt is heated in a dry test-tube a faint grayish film first deposits on the walls of the glass. Under an increased temperature the salt then sublimes unchanged in white crystals. But as a portion of the saline vapor in the upper end of the tube necessarily mingles with the air it is decomposed by the oxygen of the latter yielding free iodine, free ammonia and water. The free iodine first appears as a violet vapor, but being absorbed by the saline humidity forms a brown deposit which soon becomes black as the iodine crystallizes. During the heating process the residuary iodide at the bottom of the tube remains white and crystalline until all has sublimed and deposited farther up in the tube as equally white crystals.

The Pharmacopœia also states that the discolored salt may again be whitened by washing it with stronger ether and rapidly drying. The writer could not obtain the requisite whiteness by this method. Furthermore the escaping ether seems to invite both oxygen and water to degenerate the salt anew.

It was ascertained that acetic ether is perfectly satisfactory as a decolorizer, but it also dissolves a very considerable proportion of the salt. On treating the red acetic ether solution with a little water, two strata are formed. The upper one retains most of the free iodine and but little of the salt, whilst the lower one, being chiefly aqueous, contains most of the iodide and some free iodine.

Alcohol does not wholly decolorize the salt whilst it also dissolves too large a proportion of it. Chloroform, benzene and benzin were found inapplicable for other reasons beside lack of solvent power over the adherent iodine.

At this juncture it seems appropriate to say something about the prevalent nomenclature attaching to the two substances last named.

It is not commonly understood that benzin, also termed, benzine, naphtha, gasoline, petroleum spirit, &c., is wholly different from benzene, also called benzol, and benzole. The former body, which might conventionally be termed, benzane, is a mixture of hydro-carbons, belonging exclusively to the paraffin series, a portion of the so-called fatty group. The latter body, benzene, is the characteristic member of the so-called aromatic group of hydro-carbons. Still another confusion prevails in the indiscriminate application of classic, ordinal and generic terms. For instance the fatty group as a whole is classed as methane derivatives, although methane is but a paraffin and although the class of fatty hydro-carbons is composed of the orders of paraffins, olefines, acetylenes, terpenes, &c.

Then in addition the fatty group is designated as paraffinoids and in analogy the aromatic group is styled the benzenoids, a nomenclature, which is as incorrect and unsatisfactory as the former. Chemical and physical inferences have led to the structural symbolization of the fatty hydro-carbons and derivatives, as so-called open chains. That is the graphic representation of the main axis is flat, hence they might appropriately be termed the organic homaloids. For pertinent reasons the members of the aromatic group are represented as closed chains. Hence, since their main axes are recurved upon the origin, they might with equal propriety be styled the organic sphericoids. But independently of this nomenclature, the paraffins, olefines, acetylenes, terpenes, benzenes, &c., might conveniently and correctly be known as the methanids, ethenids, ethinids, terpenids, benzenids, &c., respectively. Hence for instance a terpenid may be a sphericoid and yet have no structural relation to the benzenids.

On slowly evaporating an aqueous solution of ammonium iodide in contact with the air iodine is liberated, whilst the liquor turns yellow and gradually brown. Meanwhile rather large glassy crystals of the salt are formed. After evaporation to dryness and extinguishment of the free iodine by some suitable method, the finished product is not desirably white owing to the preponderance of transparent crystals. When, however, the solution is rapidly boiled down until most of the salt has crystallized and the remaining water is finally expelled by water-bath heat, a minutely granular and white salt results. But no process of condensation in presence of the atmosphere will yield a product untainted by free iodine. So remarkably small a proportion as one per cent. of water will dampen the salt; but a water-bath temperature readily dispels it, so that a perfectly dry granular powder destitute of adhesive capacity is obtained. As already stated, a much discolored salt can be rid of most of the contaminating free iodine by means of careful heating. But as total decolorization is thus impossible other aids become necessary. When solution of sulphurous oxide is dropped upon practically white ammonium iodide the mixture becomes yellow from liberated iodine. But if a reddened salt is treated with the acid first neutralized with ammonia the free iodine is extinguished by the ammonium sulphite. This last reaction, therefore, offers a remedy for the restoration of the normal appearance or a barrier against its escape. The lesser evil of contamination by traces of sulphate and sulphite seems warranted against the greater by vitiation through free iodine. Hence, instead of attempting the reclamation by washing with ether, which does not reclaim, it is better to treat the discolored salt with a mixture of sulphurous acid and ammonia and dry it on a water-bath.

The usual method for preparing iodide of ammonium consists in precipitating a solution of either ferrous or ferric iodide with ammonia and evaporating the filtrate to dryness. By this process it is not always possible to obtain a salt wholly free from iron, especially when cast iron filings were used in the preliminary preparation of the iron salt. However, when pure calcium iodide, prepared by whatever method, is decomposed with excess of ammonium bicarbonate aided by heat, several advantages are secured thereby.

Prominently among these is the crystalline and compact form in which the calcium carbonate precipitates. From this results the further possibility of procuring the generated ammonium iodide in a

more concentrated solution than usual, whilst the washing out of the salt is effected with relatively little water. These conditions, hence, necessitate the expulsion of comparatively less water, and consequently occasion the exposure of the salt during a more limited period. In connection with this also goes the important advantage derived from the ready manner of producing the required calcium iodide. Elsewhere (AMER. JOUR. PHARM., May, 1883) the writer gave a process for this purpose. This permits the generation of the ferric iodide, calcium iodide, and finally ammonium iodide, in an uninterrupted course requiring no large variety of utensils and but a single filtration. Ultimately the ammonium salt is absolutely free from iron and calcium. A fine annealed iron wire should be used in abundant excess in the preliminary production of ferrous iodide. This form of iron contains some carbon and traces of other substances which either remain or become insoluble during the operation. An only seemingly considerable grayish flocculent residue separates; this, however, is but the superficial magnetic oxide of iron with which the wire becomes covered during its manufacture. In order to avoid any possible excess of iodine in the generation of the ferric iodide, more than two-thirds of the iodine is employed in the formation of the ferrous salt. In this case the precipitated ferric hydrocarbonate is as compact and granular as usual. These various considerations have led to the construction of the following formula:

Iron wire, very fine and in long spiral loops	1	troy ounce.
Iodine	3	" ounces.
Calcium carbonate precipitated	1½	" "
Ammonium bicarbonate cryst	1½	" "
Ammonia water,		
Sulphurous acid,		
Water, of each sufficient.		

Mix two and one-eighth troy ounces of the iodine with the iron wire and eight fluid ounces of water and set the mixture aside, stirring it up occasionally until complete combination has been effected. Decant the light green liquid, wash the residuary iron wire with two fluid ounces of water and unite the washings with the first decantate. To this mixture now add the remaining iodine and when it has wholly dissolved, gradually add the calcium carbonate, facilitating its decomposition towards the last by the application of a gentle heat. Then gradually add the ammonium bicarbonate, heat the mixture until effervescence has nearly ceased and filter it when nearly cooled. Wash

the residue on the filter with water until it is practically freed from ammonium iodide and unite the resulting filtrates. Boil this solution in an open dish until it shows signs of discoloration and add to it 20 minims of sulphurous acid, mixed with 40 minims of ammonia water. Now continue the evaporation at a boiling temperature until a crystalline magma has resulted. Then remove it to a water-bath and proceed with the condensation until a perfectly dry white salt is obtained. Should the salt have acquired free iodine afresh repeat the treatment with sulphurous acid and ammonia.

ANALYSIS OF THE LEAVES OF TUSSILAGO FARFARA, *Lin.*

By Charles S. Bondurant, Ph. G.
(From an Inaugural Essay).

The leaves were carefully freed from the long petioles and other extraneous matter. On account of their tomentose character considerable trouble was experienced in reducing them to No. 80 powder. Moisture determined in a portion of the air-dried drug amounted to 7·8 per cent. This may include a small percentage of volatile oil which was also present.

Fifty grams (50 gm.) were taken for analysis. Complete exhaustion with petroleum spirit yielded 2·18 per cent solid matter at 100° C. On increasing the temperature to 110° C. an acrid volatile oil was driven off in small quantity. The residue after driving off volatile oil, yielded nothing to distilled water. Boiled with absolute alcohol, the solution, on cooling, deposited a small amount of waxy matter of low melting point. Caustic potash was added to the alcoholic solution and after boiling, diluting and acidifying, a small portion separated insoluble in water, showing presence of a small amount of resinous matter. That portion of the petroleum extract, insoluble in absolute alcohol, was caoutchouc, soluble in chloroform, bisulphide carbon and ether, not saponified with strong solution of potassa.

The residue of the original 50 gm. was next macerated with stronger ether until exhausted with that solvent, which extracted 2·63 per cent. solid matter sparingly soluble in distilled water, to which it imparted an intense bitter taste. This aqueous solution contained no tannin, and gave no reaction for alkaloids, but was found to readily reduce Fehling's solution after boiling with dilute hydrochloric acid and neu-

tralizing, thus giving evidence of a glucoside. After evaporating this aqueous solution on a water bath to a small bulk and placing this over sulphuric acid for several days, a white amorphous solid had separated, quite bitter and inodorous, but on boiling with dilute sulphuric acid, a strong odor, similar to that of wetted leather, was evolved. Thus decomposed and neutralized, the liquid reduced Fehling's solution.

That portion of the ethereal extract insoluble in water was treated with hot absolute alcohol which failed to dissolve the whole of the residue. The alcoholic solution filtered and poured into a large quantity of acidulated water, separated a dark brown-reddish resin, which, on drying became brittle, dark red with concentrated sulphuric acid, whitish on the addition of water, and was soluble in concentrated solution of caustic potash. That portion insoluble in boiling absolute alcohol was found to be caoutchouc which had escaped extraction with petroleum spirit.

The residue after exhaustion with stronger ether was macerated for 24 hours with absolute alcohol and filtered. On evaporation an extract remained which amounted to 3·28 per cent., the greater portion of which was soluble in distilled water. The aqueous solution was free from alkaloids, with ferric chloride showed evidences of tannin, and with neutral lead acetate yielded a precipitate containing 2·64 per cent. of organic matter, while gelatin and alum precipitated 2·42 per cent., the difference being probably gallic acid.

The small portion not dissolved by distilled water from the alcoholic extract was found to be resinous and similar in character to that obtained in the ethereal extract.

The petroleum spirits, ethereal and alcoholic extracts were strongly colored green by the chlorophyll present in the leaves. The solutions were distinctly green by transmitted and dark red by reflected light.

The residue from the alcoholic treatment was dried and macerated with distilled water during 24 hours, then filtered and made up to known volume by passing distilled water through the filter. The extracted matter amounted to 11·22 per cent. The aqueous solution, treated with 2 vols. of absolute alcohol precipitated 3·42 per cent. of mucilage; the filtrate concentrated and treated with 4 vols. of absolute alcohol deposited 6·23 per cent. of dextrin and allied carbohydrates, and the filtrate from this on evaporation yielded saponin, insoluble in absolute alcohol, soluble in chloroform, turning purple with concentrated sulphuric acid and yielding frothing solutions with water.

The residue of the powdered leaves left after treatment with water

was next treated with a 0.2 per cent. solution of caustic soda, the filtrate slightly acidified with acetic acid, and mixed with 3 volumes of 95 per cent. alcohol; the precipitate was dried at 100° C., weighed, incinerated, and after deducting the ash, gave 6.21 per cent. albuminous matter present.

The residue of the leaves not dissolved by caustic soda was treated with dilute hydrochloric acid, the filtrate neutralized with ammonia, the precipitate dried, and incinerated to calcium oxide, and calculated to calcium oxalate, amounting to 1.26 per cent.

The residue of the 50 gm. of powder, on being treated with distilled water and chlorine gas, lost 19.42 per cent. of lignin and incrusting substances, the dried residue of 28.43 per cent. constituting cellulose.

A qualitative examination was made of the ash weighing 17.10 per cent. of the powdered leaves; it contained potassium, calcium, magnesium, iron and aluminium, chlorides, phosphates, carbonates and silicates.

GLEANINGS IN MATERIA MEDICA.

By the Editor.

Digitalin, according to Ph. Lafon, (*Archives de Phar.* 1887, p. 32) is not altered by diastase, pepsin, gastric juice, pancreatic juice, bile, yeast, emulsin or in contact with putrefying substances, and therefore, cannot be altered in the digestive canal; but after it has entered the circulation it appears to be oxidized. Alkalies and mineral acids, with the exception of nitric acid, do not interfere with the detection of digitalin; but this is destroyed by nitric acid.

Cannabis indica has been experimented with by Dr. J. Roux, (*Archives d. Phar.* 1887 p. 1) the preparations having been made by Duquesnel. The drug was exhausted with alcohol, and the alcoholic extract was freed from matters soluble in water which were inert; the remaining green mass was then treated with petroleum benzin and with ether. Of the three extracts thus obtained, that made with ether produced insignificant results. The petroleum extract was found to be excitant and convulsivant, and in the dose of a gram produced coma and in 11 or 12 hours death of the animal. The alcoholic extract has narcotic properties, but its action is uncertain, if small doses are given.

Formation of solanine in potatoes.—Thus far this alkaloid has been obtained only from potatoes while unripe or during the time of sprout-

ing. Dr. Geo. Kassner, of Breslau, reports (*Zeitschr. f. Nahrungs Unt. u. Hygiene*, 1887, p. 22,) that he succeeded in proving its presence and isolating weighable quantities from potatoes which had been injured, and had afterwards been kept for some time in a cellar. In such cases the wound becomes covered with a kind of scurf, beneath which dark colored spots and stripes are usually observed in the white tissue, and the potato has generally a disagreeable taste. It has not been ascertained whether under this circumstance the presence of solanine is due to the vital functions of the tuber, as is the case while sprouting, or whether it must be referred to the action of the fungoid mycelium appearing upon the wound, and regarded as a decomposition product of the nitrogenated constituents of the potato. It would be of interest to ascertain whether the different varieties of cultivated potatoes will always generate solanine under the conditions mentioned above.

Commercial Jalapin has been examined by Edmund White, (*Phar. Jour. and Trans.*, Feb. 12, 1887, p. 651,) who found seven samples to contain between 3·5 and 7·3 per cent. of ether-soluble resin, while an eighth sample was completely soluble in ether, and was probably derived from Tampico jalap. The moisture present in the samples which were in powder and nearly white, amounted to between 2 and 5 per cent., and the alcohol-soluble resin, between 87·8 and 94·8 per cent.

Commercial jalap resin was likewise examined, six samples yielding the following results :

7·8 sol. in ether,	88·2 sol. in alcohol,	trace sol. in water.
7·2 " "	89·2 " "	none " "
8·4 " "	72·4 " "	16·6 " "
77·8 " "	16·6 " "	3·1 " "
25·6 " "	72·0 " "	trace " "
46·0 " "	50·4 " "	none " "

The ether-soluble resins were in all cases plastic and tenacious. Only two of the six resins correspond to the requirements of the pharmacopœia.

The chromate test for quinine, as recommended by Dr. De Vrij, consists in dissolving 5 gm of quinine sulphate in 500 cc. of hot water, adding 1·2 gm. of normal potassium chromate dissolved in a little water, cooling for twelve hours, washing the crystals of quinine chromate upon a filter with distilled water, weighing the crystals and adding for every 100 cc. of filtrate 0·05 gm. of quinine chromate remain-

ing in solution. Dr. O. Hesse shows (*Phar. Jour. and Trans.*, Jan. 22, 1887, p. 585,) that the salt loses water of crystallization between 80° and 90° C., but that when dried in the exsiccator or at 60° C. its molecular weight is 802·5 (not 766·5,) and its formula $(C_{20}H_{24}N_2O_2)_2$ Cr O_4H_2. $3H_2O$ corresponding with 4.48 per cent. of water of crystallization.

The editor of the *Pharm. Journal* points out that the formula originally suggested for the chromate (anhydrous) shows an excess of between 4 and 5 per cent. of pure quinine sulphate; also that the addition recommended to be made for quinine chromate dissolved, amounts to no less than 5 per cent. of the total quantity of quinine sulphate operated upon, and is equal to the average amount of impurity to be tested for.

Gallois calls attention (*Jour. Phar. Chim.*, Jan. 1887, p. 77,) to a memoir published in 1862, by J. J. André, on the chromates of certain alkaloids, in which it is stated that the neutral anhydrous quinine chromate is soluble at 100° in 160 parts, and at 15° C. in 2400 parts of water; and that neutral potassium chromate precipitates, from solutions of cinchonine and quinidine salts, free alkaloid and acid chromate of alkaloid.

The detection of cocaine in the animal body has been investigated by Dr. L. Helmsing. (*Thesis*, Dorpat, 1886.) On giving 0·3 gm. of the hydrochlorate to a cat, which was strangulated after five hours, the alkaloid could be detected in the urine, blood, and all the organs. On decreasing the quantity of the alkaloid, the urine let by the animal gave distinct reactions, but those of the organs became fainter. There appears to be no doubt from the results of the experiments, that cocaine is decomposed in the body, and that the product of decomposition is dissolved from the alkaline urine by benzol, but not by petroleum benzin.

The process of isolation was as follows: The substance was acidulated with sulphuric acid, the mixture agitated with petroleum benzin (benzol and chloroform likewise take up no alkaloid from the acid mixture), then rendered alkaline, agitated with benzol and the solvent evaporated. The reagents employed were iodine, in potassium iodide, which gives a kermes-colored precipitate in solutions 1: 100.000; and iodine water, which causes a violet color and turbidity, and if added in excess a kermes-colored precipitate, still distinct with ·01 mg. of residue. Of the group reagents only potassio-mercuric iodide and phos-

pho-molybdic acid gave precipitates in solutions 1: 100.000. Characteristic color reactions were not observed.

Resorcin and Pyrocatechin in the animal economy.—From the experiments of Dr. Joseph Schomacker (*Thesis*, Dorpat, 1886), the following conclusions may be summarized. Both substances given per os or subcutaneously in even relatively small doses, may be detected by Dragendorff's method in the urine and in the different organs. They appear in the urine as sulpho-acids which on boiling with HCl or H_2SO_4 are decomposed liberating resorcin or pyrocatechin; after taking it in large doses, the former is found in the urine also in the free state. The excretion with the urine is completed in about seven hours for resorcin, and in about five hours for pyrocatechin; neither of the two compounds has been found in the feces. Both are best isolated by means of acetic ether, and the most characteristic reagents are chlorinated lime for resorcin, and ferric chloride for pyrocatechin.

The reactions and their limits were ascertained as follows:

Resorcin: ·001 gm. with ferric chloride fine violet color, not observable with ·0005 gm. Diluted solution of chlorinated lime gives with ·00005 gm. a faint reaction, and with ·0001 gm. a distinct violet color, gradually becoming yellow; on the careful addition of the reagent these colors may be repeatedly observed, and it is therefore, best added drop by drop. Froehde's reagent produces after some time a violet color with ·0005 gm. Sulpho-vanadic acid (1 ammonium vanadate to 100 sulphuric monohydrate) turns blue changing to violet; this change is not very plain with ·00005 gm.

Pyrocatechin. ·0001 gm. with ferric chloride becomes green, and then on the addition of ammonia, cherry red, blue and violet. Chlorinated lime turns blue-green. Froehde's reagent with ·00005 gm a green color, and with ·005 gm. a blue-green color mixed with violet and blue streaks. Sulphovanadic acid with ·0001 gm. a blue-green color; or in the presence of sulphuric bihydrate a green color.

Valeriana Hardwickii, Wallich.—An analysis has been made of the rhizome of this East Indian plant, by J. Lindenberg (Dorpat Pamphl.—Phar. Zeits. Russl. 1886), and compared with one of Val. officinalis, *Lin.* The direct determination of valerianic acid, total albuminoids, and total water soluble substances gave for the former 1·37, 11·06 and 28·59 per cent. respectively, and for the officinal drug 1·21,

9·38 and 24·88 per cent. The results of the quantitative analysis were:

	V. Hardw.	V. officin.
Moisture	10·46	11·57
Ash	4·04	4·31
Fat and resin, soluble in petroleum-benzin	0·56	0·36
Volatile oil and valeric acid, sol. in benzin	1·005	0·90
Volatile acid soluble in ether	0·335	0·31
Resin and wax soluble in ether	0·56	0·85
Resin soluble in alcohol	1·05	0·975
Tannin	3·13	1·64
Citric, tartaric and other acids	0·335	0·565
Glucose	6·03	5·32
Other substances, sol. in water, insol. in alcohol	14·96	14·39
Mucilage and albumin sol. in water	4·16	2·97
Albuminoids extracted by soda	9·72	7·83
Metarabic acid, phlobaphene and albuminoids	19·10	16·70
Starch	14·05	12·87
Cellulose	10·36	11·65
Lignin and other compounds	10·015	16·80

Butea frondosa, Roxburgh.—The seeds have been analyzed by Nikolai Waeber, (Dorpat Pamph.—Phar. Zeits. Russl. 1886.) The seeds are flat, about ½ inch long, 1 inch broad and inch thick; testa dark reddish brown, veined; hilum projecting; cotyledons broad, leafy, veined; radicle small; taste somewhat bitter. Alkaloids and glucosides were not found. The results of the analysis were: moisture, 6·62; ash, 5·14; fat, 18·20, wax soluble in ether, 0·25; albuminoids soluble in water, 9·12, soluble in soda, 1·95, and insoluble in water and soda, 8·49; substance apparently nitrogenated, soluble in alcohol, 0·82; mucilage, 2·28; glucose, 6·87; organic acids, 4·00; other substances soluble in water, 2·16; metarabic acid and phlobaphen 10·10; cellulose, 3·80, and other insoluble substance, 22·20 per cent.

Ulexine.—The alkaloid discovered by Gerrard in Ulex europæus, *Lin.*, has been experimented with by Dr. Pinet (*Arch. Physiol.*, 1887.) It produces convulsions resembling those following nicotine, then sleepiness and cessation of respiration; it appears to affect the nervous, but not the muscular system. It is not an antidote to strychnine, its effects being rapidly produced, but not lasting. See also Am. Jour. Phar. 1886, p. 491.

Croton oil.—According to the investigations of H. Senier, from 1878 to 1883, the rubefacient and drastic properties of croton oil reside in two distinct compounds, of which that producing vesication may be

removed by alcohol. Prof. Kobert, of Dorpat, reports (*Chemiker Zeit.*, 1887, No. 28, p. 416,) the results of researches made at his suggestion by Ernst von Hirschheydt, which show that the oil contains Buchheim's crotonoleic acid, partly in the free state and partly as glyceride. The latter is not poisonous, but the free acid is very irritating and drastic. The glyceride being decomposed by the pancreatic ferment, thereby becomes purgative when taken internally; but the same effect may be produced by giving crotonoleic acid in pills covered with keratin with the view of preventing irritation of the stomach; but obviously, irritation of the intestines will be produced by both compounds.

The solubility of croton oil is mainly influenced by the age of the oil, and samples are sometimes met with which dissolve in alcohol in all proportions; but it does not seem necessary that such oils should contain the crotonoleic acid only in the free state, though the acid is readily soluble in alcohol.

For the preparation of *crotonoleic acid* Kobert recommends digestion in a water-bath of the alcohol-soluble portion of croton oil with an excess of concentrated baryta solution; the thick white mass is thoroughly mixed and washed with cold distilled water, whereby coloring matter and barium acetate, butyrate and tiglinate are removed; the residue is drained, dried and exhausted by ether, which leaves behind the barium salts of stearic, palmitic and lauric acids. On evaporating the ethereal solution a mixture of barium oleate and crotonoleate is obtained, of which the latter only is dissolved by alcohol; this solution is decomposed by the careful addition of H_2SO_4, and after filtering evaporated. The main difficulty for the preparation of free crotonoleic acid lies in the readiness of its being decomposed by baryta water under the influence of too high a heat.

Sodium crotonoleate alters the walls of the blood vessels and causes hemorrhages.

Asclepias currasavica, A. incarnata and Vincetoxicum officinale were found by C. Gram (*Chem. Centr.* 1886, p. 735) to contain a glucoside, *asclepiadin* which is readily soluble in water, sparingly soluble in alcohol, and is easily converted into the less active asclepin. Harnack's asclepiadin which appears to be identical with Feneulle's asclepin, was obtained from the herbaceous portion of Ascl. currasavica. The root of vincetoxicum yielded asclepidin, but no asclepin. Of two commercial resinoids of Ascl. tuberosa that prepared by Parke, Davis &

Co. consisted of asclepin with a small quantity of a substance having a tetanic action; while that prepared by Keith & Co. was a mixture of asclepiadin, asclepin and asclepion, the latter being a constituent of vincetoxicum and of milkweed.

Mutisia viciæfolia, Cavanilles.—This plant is stated by Mr. Naudin (*Jour. d'Hygiène*, 1886), on the authority of Dr. Sacc of Cochabamba, Bolivia, to enjoy the reputation of curing phthisis and all pulmonary diseases. The plant is indigenous to the western part of South America from Chili to Peru, and belongs to the labiatifloral compositæ which are confined chiefly to South America, and the leaves of which are usually mucilaginous, somewhat bitter, and occasionally more or less aromatic. A number of species are locally used as expectorants.

GLEANINGS FROM GERMAN JOURNALS.

By Geo. H. Ochse, Ph. G.

Spermaceti is frequently adulterated with stearic acid. To detect the adulteration a definite quantity is fused in a capsule and ammonia added, stirring several moments. Stearic acid forms an ammonia soap which is subsequently decomposed with hydrochloric acid. By this process 1 per cent. of stearic acid can be detected.—*Phar. Zeit. f. Russl.*, xxvi, 249.

Invisible or Postal Card Ink.—16 grams of chloride of cobalt are dissolved in 500 grams of distilled water. The writing on heating turns blue.[1]—*Phar. Zeit f. Russl*, xxvi, 239.

The following formulas are recommended by Soxhlet (*Neue Erfind. und Erfahrungen*):

Extract of new mown hay.—Cut tonka beans 5·0, orris root 10·0 vanillin, 0·05; oil of bergamot 30 drops; oil neroli, 2 drops; oil rose, 2 drops; oil lavender, 2 drops; oil cloves, 1 drop; patchouly leaves, 0·20; benzoic acid, 0·50; herb urticaria, 2·0; cologne spirit, 207·0. Digest 14 days and filter.

Millefleurs oil for perfuming hair oil and pomade:—Oil cinnamon, 10 drops; oil of neroli, 20 drops; oil of rose, 20 drops; oil of cloves and oil of orange, each 2·0; oil of calamus, 20 drops; oil of geranium, 10·00; oil of lemon, 15·00; oil of bergamot, 15·00; oil of verbena, 5·00.

[1] This is *Hellot's sympathetic ink*, an old preparation. Any soluble cobalt salt may be used, with or without the addition of a little sodium chloride. —Editor.

Extract of reseda :—Cut tonka beans, 2·0; liquid styrax, 1·0; orris root, 50·0; oil of neroli, 10 drops; oil of rose, 10 drops; oil of bitter almond, 2 drops; oil of bergamot, 20 drops, ambergris, 1·0; musk, ·50; herb of urticaria, 2·00; cologne spirit, 250·00. Digest from 8 to 14 days and filter.—*Phar. Zeit. f. Russl.*, xxvi, 240.

Terebene tablets :—Terebene, 15; powdered gum arabic, 12; distilled water, 60; pulverized sugar, 180; powdered tragacanth, 80. Make 100 tablets. The terebene is emulsified with gum and water and then the mixture of sugar and tragacanth added.—*Phar. Zeit. f. Russl.*, xxvi, 191.

Liquid paraffin as an excipient for hypodermic injections.—Dr. Mennier–Lyon has discovered that several substances which, owing to their irritating properties, could not be used hypodermically, lose this disagreeable property when dissolved in liquid paraffin, which to be suitable for hypodermic use must be neutral to litmus-paper; heated to 180°C. no vapors should be evolved, sp. gr. at 150°C.=0·870—0·895; it should be odorless and tasteless. If corresponding with the aforesaid properties a slight fluorescence does not impair its efficacy, although the German pharmacopœia condemns it. Liquid paraffin dissolves only a limited number of oxygenated compounds, but readily dissolves hydrocarbons, ether, chloroform, fats and fatty oils; menthol, thymol, terpinol, etc., are soluble in all proportions. Large quantities of iodine, bromine, phosphorus and iodoform are also soluble in liquid paraffin. According to Bocquillon, it dissolves four times its volume of sulphuretted hydrogen gas, i. e., more than water is capable of dissolving. Oil of eucalyptus produces abscesses when injected subcutaneously, hence eucalyptol—(so-called absolute eucalyptol obtained by distilling oil of eucalyptus at a temperature of 170°—180°C.) only should be used. One part of eucalyptol is mixed with 4 parts of liquid paraffin. 5 grams of this mixture are injected twice daily. The same proportions are used for myrtol. For iodoform the following method is used: 1 gram of iodoform is dissolved in 20 grams of eucalyptol and 100 grams of liquid paraffin. Of this mixture 5 grams are injected twice daily. Carbon bisulphide 2 to 100 of paraffin oil is used in same doses.

Liquid paraffin will not dissolve water, strong or diluted alcohol, glycerin, methylic alcohol, amylic alcohol, salicylic acid, salts of mercury, terpin, chloral, naphthol, alkaloids, glucosides and iodol. It dissolves but a small quantity of carbolic acid.—*Ph. Post.* xx, page 207.

Piperonal an antiseptic.—Piperonal or heliotropin has been used only in perfumery. It is called heliotropin, because found in the flowers of heliotropium peruvianum. Piperonal is obtained by oxidation of piperic acid with potassium permanganate in alkaline solution. Fraggani recommends heliotropin as antiseptic and antipyretic. It is given in doses of 1·0 gram every 2 or 3 hours, or four times a day, even larger doses (2—3 grams) may be given at one dose.—*Pharm. Centralhalle,* xxviii, page 253.

Iodoform plaster, an excellent application to chafed surfaces.—Dissolve pure gelatin 5·0 in hot water 25·0, add glycerin and iodoform of each 1·0.

The plaster is spread on shirting. To use it it is immersed in water and slightly warmed, when it becomes soft and flexible.—*Phar. Centralhalle,* xxviii, page 253.

Uses of saccharin.—Saccharin is almost insoluble in water, its solubility is considerably increased by the addition of bicarbonate of sodium. A small quantity of this saccharin mixture suffices to agreeably sweeten the food and beverages of diabetic patients.

Fahlberg's saccharin-chinin is a mixture of 36 parts saccharin and and 64 parts of quinine. Pallatschek recommends the following mixture: Saccharin 1.07, sodium bicarb. 1·2, distilled water 100·0, sulphate of quinine 1·0. *Phar. Centralhalle,* xxviii, page 253.

Bromo-iodinized butter, recommended by Trousseaux, is made as follows: ℞ Potassii iodidi, 0·06; potassii bromidi, 0·25; sodii chloridi, 2·0; butyri recentis, 125·0. The mixture is spread on bread, like ordinary butter.—*Ph. Centralhalle,* xxviii, page 368.

ABSTRACTS FROM THE FRENCH JOURNALS.

Translated for the American Journal of Pharmacy.

Casein as an Emulsifier, is proposed by M. Léger in *L' Union Pharm.* May 15, on account of its permanence and the ease with which it may be handled. To separate it, he treats 4 litres of milk with 60 gm. ammonia for 24 hours and, after removing the saponaceous matter from the surface of the mixture, precipitates the serum with acetic acid. The magma of casein, strongly pressed, is treated with sodium bi-carbonate, with a sufficient quantity of sugar to make the dried product contain one-tenth of its weight of casein. The powdered substance dissolves easily in water and, mixed with its weight of gum, may

be used for almost all of the emulsions. Resinous matters and balsams previously dissolved in alcohol, essences and oils, may be mixed with it in the bottle itself without using the mortar. The only defect in this saccharate of casein is its slight animal odor, which, it is believed, can be counteracted.

GUMMO-PHOSPHATE OF CALCIUM.—M. Sambuc (*Jour. de Phar.; Arch. de Phar.*, June) says that the preparations in use under the names of chlorhydro-, lacto-, and citro-phosphate of calcium, are not double salts, but mixtures of mono-calcic phosphate with chloride, lactate or citrate of calcium. Five gm. for instance of the phosphate are usually found mixed with six gm. of chloride of calcium. He proposes to replace the hydrochloric, lactic or citric acids with gummic acid. As is well known, 100 gm. of arabic gum contains 0·97 of lime, 0·63 gm. of potassa, and 0·27 gm. magnesia; these quantities of potassa and magnesia correspond to 0·78 gm. of lime; 100 gm. of gum contains therefore a sufficient quantity of gummic acid to combine with 1·75 gm. (0·97 gm. + 0·78 gm.) of lime, and, consequently to render soluble 10 gm. of bicalcic phosphate which contain 3·50 gm. of lime, of which one half remains combined with the phosphoric acid. On these bases M. Sambuc proceeds to isolate the gummic acid by dialysis, using 300 gm. cleaned gum, 600 gm. water, and 24 gm. ac. hydrochlor. at 1·18. In two days the calcium, potassium and magnesium are eliminated by exosmosis, and the dialyser contains only a solution of gummic acid. He then takes 66 gm. phosphate of sodium (before efflorescence), and 40·50 gm. crystalized calcium chloride, dissolves separately and mixes. After washing and draining he mixes it while yet damp, with the dialysed solution of gummic acid which dissolves it readily. The quantities given, produce 32 gm. bicalcic phosphate. The product is feebly acid; it contains gummate of calcium which advantageously replaces the salts of calcium mixed with the monocalcic phosphate in the composition first indicated. M. Sambuc's preparation does not keep well. If a method could be devised for making it permanent, the gummo-phosphate of calcium might prove very useful.

SOLUTIONS OF MAGNESIUM CITRATE are, according to M. Reeb (*Bull. Com.*, May), less likely to show a precipitate when the carbonate is added to the acid than when the acid is added to the carbonate. He also gives a formula for concentrated citrate of magnesium as follows: boracic acid 100, citric acid 600, carb. magnesium 360, distilled water 4,000. This, he says, keeps unchanged even in winter. It might be

a handy formula for the pharmacist to use for customers who are not acting under advice, but as the *Bulletin* editor points out, "It is not permissible to modify the officinal formula of medicaments without the knowledge of the physician; and this doctrine is based not only in the interest of the patient, but the security of the pharmacist, who might be compromised on account of modifications which to him appeared legitimate enough." M. Reeb's idea about the introduction of boracic acid is interesting however: "It is very evident that the boracic acid can cause no therapeutic difficulty because, administered in a purge it has no time to become absorbed. Besides, is not the borated potassic tartrate a purgative in good usage?" Well, he might on the same grounds dispense rhubarb for castor oil.

ANEMONE PULSATILLA. In some observations upon this plant (*Gaz. Hebdom.*, May 27, June 3), P. Vigier adds little to our knowledge of it, but does something negatively for science by making no claim for its medicinal virtues beyond its sedative effect and the fact that, taken internally, it reduced the catarrhal fever of a cold in the head and nearly stopped the nasal secretion. He states that the distillations when bottled and put aside lose their bad odor and acridity and deposit anemonin. Alkalies dissolve it readily, making anemonates. He finds the atomic formula to be $C^{15}H^{12}O^{6}$ [agreeing with Fehling], the anemonic acid having one more equivalent of oxygen. "A curious peculiarity is that hydrochloric acid dissolves the anemonin without altering it, whilst nitric and sulphuric acids destroy it rapidly." He has often taken 10 centigm. of it without toxic effect; 2 to 4 centigm. a day were enough to get the anti-catarrhal effect and that on the nervous system. The leaves lose their properties by dessication; the roots do not, and these possess the medicinal properties of the plant in a much higher degree. They are gathered in June. Equal parts by weight of the root and alcohol at 90 are macerated for fifteen days. The mixture keeps well. The dose is 2 to 4 gm. a day—less than that of the tincture made from the leaves. He proposes a syrup of syr. aurant. flor. 95 gm. and tincture (as above) 5 gm.; two to four gm. daily, in water.

POISONING BY ANILINE is common enough, but cases of death from it, giving the dose and the autopsy, are rarely met with. Fr. Muller (*Deut. Med. Woch.; Arch. Gén. de Méd.*, June, 1887) reports such a case, and compares the toxic effects of the aniline with those of its derivative antifebrine. Both substances caused a cyanosis, espe-

cially marked in the lips, nose, chin, around the eyes and in the extremities. In three cases treated with antifebrine, and in the one poisoned by aniline, the spectroscope gave the methemoglobin ray. The urine of the latter case, and of a rheumatic treated with antifebrine, showed paramidophenol. The poisoned person (a woman of 33) swallowed 25 ccm. of aniline. She became comatose, absolutely insensible; pupils fixed, limbs flaccid, irregular pulse, and marked cutaneous and muco-membranous cyanosis; there was much vomiting with odor of aniline. Cutaneous and ether injections gave no result. Died next day. Autopsy: Blood was chocolate brown; spectrum showed 2 oxyhemoglobin and the methemoglobin ray. Urine contained no albumen, sugar or blood; distillations gave aniline reactions: lemon yellow with ac. hydrochlor.; violet with calx chlor.; greenish blue with ac. sulphuric and pot. chlorate; bright blue with sol. kairine. Paramidophenol was present. Acid hydrochloric, phenic and chromic gave a red color; ammonia the bright blue of indophenol. There were ecchymoses and extravasations in various tissues and organs.

Cocaine, to facilitate the operation of washing out the stomach, and also to quiet gastric pains, is recommended by Dujardin-Beaumetz (*Prog. Méd.*, May 28) to be used in a formula as follows: Water, 300 gm.; cocaine hydrochlor., 50 cgm.; dose, 2 tablespoonfuls every quarter of an hour, or until the cessation of pains or vomitings. In similar cases the following gives equally good results: Water saturated with chloroform, 150 gm.; tr. anise and illicium, of each, 5 gm.

Lactic Acid in the Green Diarrhœa of Children.—Prof. Hayem (*Bull. Gén. de Thérap.*, May 30) considers the malady of microbian origin. He finds lactic acid remarkably useful in its treatment, administering it in the form of a 2 to 100 solution, a teaspoonful being given to the child a quarter of an hour after nursing. During the twenty-four hours 5 to 8 teaspoonfuls may be given, representing 40 to 60 cgm. of pure lactic acid. It is well supported.

Iodated Cotton.—M. Quinard has improved upon his cold process of making iodated cotton (*Arch. de Pharm.*, June). He scatters the finely pulverized iodine over it as evenly as possible, and, placing it in a wide-mouthed glass-stoppered flask, exposes it to light, or, if possible, to the sun. In a week the iodine vaporizes and forms upon the cellulose.

NEW COLORING FOR WINE.—M. Portes is reported (*Archiv. de Phar.*, June), as showing to the *Société de Pharmacie* a new coloring material for wines, sold as "a colorant undiscoverable by chemists." M. Portes found it to consist of a mixture of tropæoline, sulphate of fuchsine and indigo-carmine. He first treated the coloring substance with boiling amylic alcohol which dissolved the tropæoline; the residuum, treated with alcohol, dissolved the fuchsine, and the final residuum treated with water, dissolved the indigo-carmine. Wines colored with the substance show, precisely like natural wines, a greenish reaction when treated with ammonia. This is explained by the fact that the reagent bleaches the fuchsine, leaving the blue and yellow matters, which mixing together give the green color. The coloring substance is not easy to detect in wine, the fuchsine alone being easily separated.

(The following are from a report by Dr. Zinowiew, (*Bull. Gén. de Thérap.*, May 30.,) of the proceedings of the Second Congress of Russian Physicians at Moscow, early in the year.)

URETHANE.—Lagowoï finds it very useful in insomnia arising from nervous excitability, but it is less pronounced in its effects where there is local pain. It is indicated in delirium tremens, and some forms of mania and melancholia; also to combat the cerebral phenomena of typhoid. The dose varies between 1·0 and 4·0. Urethane augments the number of respirations, but has no action on the pulse and temperature. The sleep produced is tranquil and is followed by no disagreeable sensations.

MERCURY INJECTIONS.—Sirsky reports 300 cases treated with 7000 hypodermic injections of mercury. Stomatitis very rarely appeared and no abscesses were formed. In 5 cases there was superficial cutaneous gangrene, caused by penetration into the true skin. Sirsky injected but 15 centigm of mercury to the dose, and used soluble salts exclusively. To make the injections wholly painless he sometimes added to the mercury solution a solution of 1 to 100 of cocaine nitrate.

ANTAGONISM OF STRYCHNINE AND ALCOHOL.—The results of Jarochewsky's recent experiments on dogs, are summed up as follows: Strychnine prevents alcoholic inebriation; at the same time it enables the organism to support large doses of alcohol for a very long time; it preserves the organs (liver and vessels) from the characteristic alterations produced by alcoholism. The action of strychnine is, up to

a certain limit, paralyzed by alcohol; beyond this limit, strychnine becomes poisonous to the inebriated animal. Strychnine is an excellent medicament in all forms of alcoholism. It is also a powerful prophylactic.

PRACTICAL NOTES FROM VARIOUS SOURCES.

By the Editor.

Linimentum terebinthinæ, Br.P.—The addition of more than the pharmacopœial quantity of water with the view of avoiding separation in the liniment (see Am. Jour. Ph., 1886, p. 428) is likely to interfere, more or less, with the absorbent action of the turpentine; but, according to G. E. Perry (*Phar. Jour. Trans.*, April 30, 1887, p. 899), a therapeutically and pharmaceutically satisfactory liniment is obtained by using more soap and less water, and manipulating as follows: Dissolve in a bottle camphor 1 oz. in oil of turpentine 16 fluidounces, add soft soap 4 ozs. and water 1 oz., and shake. Thus made it is an elegant creamy emulsion, remaining sufficiently liquid, and though a slight separation will take place after a time, it is practically permanent.

Permanent solution of mercuric chloride.—Dr. A. C. Bernays states (*Weekly Med. Rev.*, May 14, 1887, p. 558) on the authority of Dr. Stuetz of Jena, that by adding 7½ grains of citric acid to each quart of water used in making solution of bichloride of mercury there would be no reduction of the $HgCl_2$, and also no precipitate when albuminoid solutions are admixed.

Blaud's pills.—The paper of Mr. W. Duncan (See May number, p. 235) has called forth two communications which were read April 13, at Edinburgh, before the Pharmaceutical Society of Great Britain (*Phar. Jour. Trans.*, April 23, pp. 864–866). Peter Boa gives the following formula: Rub granulated (precipitated) ferrous sulphate, 30 grains, with sugar 10 grains, add potassium carbonate (15 to 16 p. c. H_2O), 20 gr., triturate, add powdered tragacanth, 3 gr., and beat into a mass for twelve pills. The beating required is considerable, but nothing else is needed to make a mass which rolls easily if not allowed to lie. These pills keep for any reasonable time with only a trifling loss of ferrous salt; it is unnecessary to coat them.

Thos. Thompson suggests the use of gelatin capsules, the two exsiccated salts to be incorporated separately, with almond oil, then mixed and

put into capsules. Or 24 pills may be made according to the following formula:

Exsiccated sulphate of iron	36 grains.
Anhydrous carbonate of potassium	30 "
Powdered sugar of milk	25 "
Pulverized tragacanth	10 "
Castor oil sufficient.	

The mass is not easily rolled out; but after the pills have been made two days they may be coated with gelatin, and will then keep without any decomposition taking place.

Standard extract of belladonna, containing 2 per cent. of total alkaloid, is proposed by Prof. Dunstan and Francis Ransom to be prepared as follows (*Phar. Jour. and Trans.*, April 16, 1887, p. 843): macerate belladonna root in No. 20 powder, 1 pound, with 40 fluidounces of a mixture of alcohol 48 fluidounces and distilled water 12 fluidounces; after two days transfer to a percolator, displace by adding the remaining liquid, express, filter, mix and measure the exact volume of the tincture, of this evaporate 50 cc. over a water-bath, until the alcohol is dispelled; dissolve the extract in 5 cc. of warm distilled water acidulated with dilute hydrochloric acid; filter through a little cotton wool into a suitable separator; add ammonia until distinctly alkaline, and agitate with 5 cc., and afterwards with 3 cc. of chloroform. Mix the chloroformic solutions and agitate this with 5 cc., and then with 3 cc. of dilute hydrochloric acid; mix the acid solutions, render alkaline with ammonia, and agitate as before, with 5 cc. and 3 cc. of chloroform. Evaporate the chloroformic liquid, dry the residue at 200° F. (it should then be nearly colorless), weigh carefully, and calculate the total amount of alkaloid present in the tincture. Evaporate this to dryness over a water-bath and add sufficient sugar of milk to make the mixed product exactly fifty times the weight of the total alkaloid found to have been present in the tincture. Mix intimately, powder and transfer at once to a well stoppered bottle.

Purity of ether.—The present British Pharmacopœia directs that ether shaken with solution of potassium iodide and starch paste should produce little or no blue color. Prof. Dunstan and T. S. Dymond have investigated this test (*Phar. Jour. Trans.*, April 16, 1887, p. 841), and found that ether prepared from sodium ethoxide and ethyl iodide, does not liberate iodine from potassium iodide, until after about three hours traces of it are set free; but hydriodic acid at once caused the liber-

ation of iodine. Ether prepared from sulphuric acid and alcohol liberates iodine from strong solutions of potassium iodide, and very slowly from dilute solutions, the reaction being accelerated by the presence of acid. The reaction is not due to ozone, for on agitating the ether with mercury or silver the filtrate had the same behavior before. On warming the ether with solution of sodium carbonate, neither the escaping gas nor the remaining ether had any effect upon potassium iodide. The presence of *hydrogen peroxide*, thus indicated, was shown by shaking the ether with a very dilute solution of potassium chromate acidulated with sulphuric acid, when the ether separated of a deep blue color, due to perchromic acid. Some commercial ethers, particularly if made from methylated spirit, contain an impurity which forms H_2O_2 after a short time, and this may then be detected by the perchromate test. The quantity of H_2O_2 amounted to only ·04 per cent. determined from the iodine liberated. The impurity may be removed by treating the ether with excess of lime and washing the distillate with alkaline water.

PREPARATION OF SURGICAL DRESSINGS.

The French military authorities have caused steps to be taken for purifying *charpie* before rendering it antiseptic, and the mode of imbuing it with the several kinds of antiseptic preparations are laid down with great precision. To purify the charpie, four litres of boiling water are to be poured on each kilogram; this is to be allowed to cool, and the charpie is then to be removed and washed freely in fresh water until the water passes off perfectly clear. The charpie, after the water has been pressed out, is next to be soaked for three-quarters of an hour in six litres of a solution, 1 in 30, of chloride of lime, and again washed in water until all odor of the chloride has disappeared. The charpie is then put into six litres of dilute hydrochloric acid, 1 in 30, and, half-an-hour afterwards, is withdrawn and washed, until it does not redden litmus paper. It is now pressed, dried, and rubbed until it is sufficiently supple. The following are the preparations employed for rendering the purified charpie antiseptic.

For the *mercurial charpie* (*charpie bichlorurée*) 1 gram of the bichloride of mercury is dissolved in 100 grams of alcohol; and this solution, together with 10 grams of glycerin and 10 grams of Senegal gum, is added to 2½ kilograms of distilled water. Into this solution

1 kilogram of the purified charpie is plunged; and, in order to distribute the bichloride throughout its substance, the liquid is pressed out and reabsorbed several times. It is then withdrawn, dried, and packed.

To prepare the *boric charpie*, 100 grams of crystallized boric acid are dissolved in a sufficient quantity of water; 100 grams of glycerin and 20 grams of Senegal gum previously dissolved, are added to the solution, and pure water is added to make up the amount to 2½ kilograms. One kilogram of charpie is treated in this solution in the same manner as has been described with the mercurial charpie.

To prepare the *carbolized charpie*, two plans are given, but the following is the one recommended as the most simple and equally effective. A layer of the purified charpie is laid on a piece of oiled silk (*taffetas gommé*) and over this is placed a piece of filtering paper of sufficient size. The paper is sprinkled with carbolic acid dissolved in alcohol of 95° strength. The whole is then rolled up in the oiled silk, secured firmly by cord, and placed in a chamber at a temperature ranging from 68° to 77° F. If the charpie is required to be carbolized 10 per cent., the blotting-paper is sprinkled with 100 grams of the carbolic acid dissolved in 50 grams of alcohol at 95°; if 5 per cent., then with 50 grams of the carbolic acid in 50 grams of alcohol at 95°. —*Brit. Med. Jour.*, March 12, 1887; *Quart. Therap. Rev.*

IRISH MOSS AS A SUBSTITUTE FOR GUM ACACIA IN PHARMACY.*

By Peter Boa.

At the present time when the price of gum arabic is about five times what used to be considered its normal value it seems not inappropriate to introduce for consideration a subject such as I have to bring before you to-night. A mucilage of Irish moss, prepared by boiling in water, has been largely used in America for the emulsification of cod liver oil, but so far as I have been able to ascertain by liberal reference to journals published in that country and in this, its more extended pharmaceutical use has not been proposed.

Some years ago I made experiments with the moss mucilage as an emulsifier of cod liver oil, but my experience with it did not indicate

* Read before the Pharmaceutical Society of Great Britain at an Evening Meeting in Edinburgh, Wednesday, May 11. Reprinted from *Phar. Jour. and Trans.*, May 21, p. 941.

any evidence of its superiority to other substances used for the same purpose, such as acacia and tragacanth. In consequence I abandoned further consideration of it, especially as the cost was not then an element of so urgent importance as it is now.

A few months since, however, in conversation with a pharmaceutical friend, the subject of a substitute for acacia came up. Remembering my previous experiments with Irish moss I thought this substance might possess some qualities which would make it worth considering with this object in view. Since then I have from time to time as leisure permitted gone into the subject, and the results of my experiments, so far as they appear to me to be worth recording, I propose to lay before you.

The only two British species of algæ which yield a mucilaginous jelly with water are *Gelidium corneum* and *Chondrus crispus*, or Irish moss. The latter is the more plentiful, and being a well-known article of commerce is easily obtainable. The composition of commercial Irish moss is given by Church as—

Water	18·8
Albuminoids	9·4
Mucilage	55·4
Cellulose	2·2
Mineral matter	14·2
	100·0

Stanford says it yielded him 63·7 per cent. of carragheenin, or vegetable jelly; this probably includes the albuminoids and mucilage given in Church's analysis.

The mucilage may be obtained by boiling, by heating on a water-bath, and by cold maceration. The usual method is boiling. However, having put a quantity of the moss into water to soak one afternoon, and being unable to attend to it till the next day, I found when I examined it that the water was distinctly viscous. By putting a larger quantity of moss into a smaller quantity of water, and macerating with occasional gentle stirring for twenty-four hours, I obtained a mucilage of about three-fourths the viscosity of acacia mucilage.

At the commencement I encountered a difficulty which threatened to be a serious objection. I found it exceedingly troublesome to get the mucilage clear, the insoluble particles suspended in it being so minute that the straining medium necessary to exclude them required to be so fine that the mucilage would scarcely pass through it. Mr.

Huested (*Pharm. Journ.*, July 16, 1881, p. 49) records similar experience. In a case where the small particles in suspension would not be objectionable, a fairly presentable product may be obtained by using muslin or calico as the straining material, and gently stirring or pressing. For emulsions this serves admirably. In a clear mixture, however, the particles become objectionably evident when the mucilage is diluted. To obtain a clear preparation Mr. Huested recommends that the mucilage while hot should be poured into a flannel filtering-bag and allowed to drain through, no pressure or stirring being employed. Proceeding in a similar way I failed to get satisfactory results. I could neither get the mucilage to run through reasonably rapidly nor obtain it so clear as I desired. It may be that Mr. Huested's manipulation is superior to mine, or his mucilage was not so clear as that which I have now succeeded in preparing. After many failures, the details of which I need not give, I found that by using a hot water funnel and straining the mucilage through absorbent cotton wool supported on muslin, a preparation clear enough for all but exceptional purposes could be obtained with comparatively little difficulty. If a perfectly water-clear preparation be required, it may be obtained by making a weak mucilage, filtering it clear, and then evaporating to the thickness required. If a clear jelly were wanted this would be the only way to prepare it, because a decoction of this consistence could not be strained, even when kept hot, in anything like a reasonable time, if at all.

A quarter of an ounce of moss, washed free from dust and sand, soaked in 24 ozs. of cold water for an hour or so, boiled gently for five minutes or heated on a water-bath for double the time, and strained in the manner I have described, yields about 18 ozs. of mucilage closely resembling in appearance and viscosity the acacia preparation, and possessing as little taste.

I have observed that the clear mucilage has less taste,—"flavor" perhaps I should say,—than that which has not been freed from insoluble particles.

A quarter of an ounce macerated in 4 ozs. of cold water for twenty-four hours, or longer, gives a mucilage such as that to which I have already made reference.

Specimens of these and of some other strengths are on the table. I have observed variations in the results from different parcels of the moss.

Comparing the moss mucilage with acacia mucilage in combinations, I find that it serves as well as the latter for chalk mixture. Guaiac. mixture made with it does not soon acquire a greenish tinge as that made with acacia: oxidation appears to be retarded and presumably the moss is therefore to be preferred. For suspending copaiba it is superior to acacia, separation taking place much more slowly and less completely. Part of the copaiba remains in an emulsified state at the bottom of the bottle when moss is used, but with acacia the liquid in the lower part of the bottle is free from anything of that kind, all the oleoresin having risen to the top.

For emulsifying cod liver oil it is greatly superior to acacia in point of preventing separation, but a finer division of the oil can be obtained by the use of acacia in greater proportion than the equivalent.

Moss mucilage, ℥vj., cod liver oil, ℥j., and water ℥ij., produce an emulsion that is practicably inseparable. Using ℥vj. acacia mucilage, ℥j. cod liver oil, and ℥ij. water, the product obtained quickly separates.

It should not be used for suspending heavy powders without some caution, for I find that when it is employed to suspend subnitrate of bismuth, the bismuth when once it settles down will not again shake up. Where there is no objection of this kind it is superior to ordinary mucilage.

Specimens are shown illustrative of the results of these comparative experiments.

In regard to compatibility moss mucilage forms a clear jelly with subacetate of lead solution; it is miscible with rectified spirit and dilute nitric acid; perchloride of iron gives a slight gelatinous precipitate.

The preparation keeps good for some weeks in full bottles without any preservative. One specimen is shown that has been kept in a partially filled bottle in the front shop for two months and it can hardly be said to be bad; other specimens, however, of about the same age have become mouldy on the top. It does not sour like acacia mucilage.

Pereira says that *Chondrus crispus* has a popular reputation for pulmonary complaints, chronic diarrhœa and irritation of the kidneys and bladder. The mucilage strikes one as being well suited for use with medicines for any of these complaints; a few ounces of it in a cough mixture, for example. It may be used freely, for it is readily digested—the melting point of the jelly being 80° F., not much above that of isinglass jelly used for invalids.

AMERICAN PHARMACEUTICAL ASSOCIATION.

The Thirty-fifth Annual Meeting of the American Pharmaceutical Association, will be held at the centrally located "Odeon," one of the best appointed halls, in the city of Cincinnati, Ohio, on Monday, September 5th, 1887, commencing at three o'clock P. M. All local Associations of Pharmacists are entitled to accredit five delegates whose credentials should be sent, at least two weeks before the meeting, to the Permanent Secretary, John M. Maisch, 143 North Tenth Street, Philadelphia, Pa. To save valuable time at the first session, the delegates from Colleges of Pharmacy and from State Pharmaceutical Associations may communicate their appointments—one member each—for the Nominating Committee, previous to the opening of the meeting.

Applications for membership should be sent with the requisite fees as early as possible to the Chairman of the Committee on Membership, Geo. W. Kennedy, Pottsville, Pa.

It is desirable that the Committee on Papers and Queries be informed at an early date of the titles of papers designed to be read at the meeting. Authors of papers and chairmen of committees, prevented from attending, may send their essays and reports to the care of the Local Secretary, Mr. Geo. W. Voss, Eighth and Depot Streets, Cincinnati.

Applications for grants from the interest of the *Centennial Fund* for defraying the expenses of suitable investigations (see Chapter vii, By-laws of Council), should be addressed to the committe consisting of the President of the Association, the Chairman of the Finance Committee, Jos. L. Lemberger, Lebanon, Pa., and the Permanent Secretary.

The Committee on Arrangements—the Local Secretary, Geo. W. Voss, Chairman—is endeavoring to provide for the accommodation, comfort and entertainment of the members, while traveling to, and during their stay at Cincinnati, where the headquarters will be at the Grand Hotel. Further information concerning the meeting and arrangements made will be found in the circular of the Permanent Secretary to be issued in August.

CHARLES A. TUFTS,

Dover, N. H., June 23, 1887. PRESIDENT.

Iodoform and silver.—Poncet (*Lyon méd.*, 1886, No. 31,) draws attention to the discomforts sometimes associated with the use of iodoform when articles of silver are used in eating. A peculiar nauseous taste is often present which is increased when food is taken. The tongue sometimes becomes coated. Poncet points out that articles of silver in contact with iodoform acquire a peculiar smell, and is of the opinion that patients, whose wounds are dressed with iodoform ought not to use silver forks and spoons to eat with. According to Cazeneuve, when iodoform and silver come into contact, iodide of silver and acetylene are formed, and to this he attributes the effects which Poncet has pointed out.—*Med. Chronicle*, March 1887.

PHARMACY LAW OF PENNSYLVANIA.

An Act to regulate the practice of Pharmacy and sale of Poisons and to prevent Adulterations in Drugs and Medicinal Preparations in the State of Pennsylvania.

WHEREAS The safety of the public is endangered by want of care in the sale of poisons, whether to be used as such for legitimate purposes or employed as medicines and dispensed on the prescriptions of physicians;

AND WHEREAS The ability of physicians to overcome disease depends greatly on their obtaining good and unadulterated drugs and properly prepared medicines;

AND WHEREAS The person to whom the preparation and sale of drugs, medicines and poisons properly belong, known as apothecaries, chemists and druggists or pharmacists, should possess a practical knowledge of the business and science of pharmacy in all its relations; Therefore

SECTION 1. *Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same*: That hereafter no person whomsoever shall open or carry on as manager in the State of Pennsylvania any retail drug or chemical store, nor engage in the business of compounding or dispensing medicines or prescriptions of physicians, or of selling at retail any drugs, chemicals, poisons or medicines, without having obtained a certificate of competency and qualification so to do, from the State Pharmaceutical Examining Board, and having been duly registered as herein provided.

SECTION 2. That there shall be established in the State of Pennsylvania a Board to be styled The State Pharmaceutical Examining Board, to consist of five persons, three of whom shall constitute a quorum, who shall be appointed by the Governor from among the most skillful retail Apothecaries actually engaged in said business in the State of Pennsylvania, and who must have had ten years practical experience in the same, one to serve five years, one four years, one three years, one two years and one one year, in the first instance; and thereafter annually the Governor shall appoint one person to serve as a member of said Board for the term of five years. The said persons so appointed shall be and constitute the said The State Pharmaceutical Examining Board, and shall hold the office for the term for which they were appointed or until their successors are duly appointed and qualified, and shall receive as a compensation for their services five dollars for each day actually engaged in this service, and all legitimate and necessary expenses incurred in attending the meetings of said board under the provisions of this act; and no part of the salary of said board or expenses thereof shall be paid out of the state treasury.

The said board shall organize by electing one of its members secretary, who in addition to his compensation as a member of said board shall receive a further sum not to exceed one hundred dollars annually, for his services as secretary.

They, the said board and each of them shall within ten days after their appointment, or being apprised of the same, take and subscribe an oath or

affirmation before a properly qualified officer of in the county which they reside, that they will faithfully and impartially perform the duties of their office.

Any vacancies occurring in said board shall be filled by the Governor of the State of Pennsylvania from among such only as are eligible for original appointment.

SECTION 3. The said The Pharmaceutical Examining Board shall keep a book of registration open at some convenient place of which due notice shall be given by advertisement in at least four newspapers in the state, and so divided as to reach as nearly as practicable all parts thereof, in which book shall be registered the name and address of each and every person duly qualified under this act to conduct and carry on the retail drug and apothecary business, or to hold the position of qualified assistant therein. And it shall be the duty of all persons now conducting or who shall hereafter conduct the business of retail apothecaries, or those acting in the capacity of qualified assistants therein, in said state, to apply to said board and be registered as such within ninety days after such notice, and thereafter every three years. Application for registration only may be sent by mail to the secretary of the examining board after being properly attested before a notary public or any other person authorized to administer an oath or affirmation in the county in which the applicant resides.

The form of application shall be subject to such regulations as the board may see proper to adopt, but in no case shall the applicant be put to any unnecessary expense in order to secure registration.

SECTION 4. The said board shall be entitled to demand and receive from each applicant for examination and registration and for the certificate hereinafter provided, a fee not to exceed two dollars, and for registration only, a fee not to exceed one dollar in the first instance, and for renewing the same every three years a fee not to exceed one dollar; and the amount derived from this source shall be held by said board and be applied to the expenses and salaries herein provided and such as may arise under the provisions of this act, and they, the said board, shall report annually to the Governor of the State of Pennsylvania all moneys received and disbursed under the provisions of this act, together with the number of pharmacists registered under this act.

SECTION 5. That it shall be the duty of said board to meet once every three months in the city of Harrisburg, or at such other place as they may deem expedient, and examine all persons who shall desire to carry on the business of a retail apothecary or that of retailing drugs, chemicals, or poisons, or of compounding physicians' prescriptions, touching their competency and qualifications; and they, the said board, or a majority of them, shall grant to such persons as may be qualified, certificates of competency or qualification which shall entitle the holders thereof either to conduct or carry on the business, or to act as a qualified assistant therein, as may be expressed upon the said certificate, and such certificate together with its renewals shall be good and sufficient evidence of registration under this act.

All persons applying for examination for certificate to entitle them to conduct and carry on the retail drug or apothecary business, must produce satisfactory evidence of having had not less than four years' practical experience in the business. And those applying for examination for certificates as qualified assistants therein, must produce evidence of having not less than two years' experience in said business.

SECTION 6. That no person shall hereafter engage as manager in the business of an apothecary or pharmacist, or of retailing drugs, chemicals, and poisons, or of compounding and dispensing the prescriptions of physicians, either directly or indirectly, without having obtained such certificate as aforesaid. But nothing contained in this act shall in any manner whatever interfere with the business of any practitioner of medicine, nor prevent him from administering or supplying to his patients such articles as to him may seem fit and proper, nor shall it interfere with the making and dealing in proprietary remedies popularly called patent medicines, nor prevent storekeepers from dealing in and selling the commonly used medicines and poisons, if such medicines and poisons conform in all respects to the requirements of section nine, provided the provisions of section ten of this act be fully complied with.

Any person who shall violate or fail to comply with the provisions of this section shall be guilty of a misdemeanor and on conviction before any court, shall be punished by a fine not exceeding one hundred dollars, or be imprisoned in the county jail of the proper county, for a term not exceeding one year, or either, or both, at the discretion of the court.

SECTION 7. That the foregoing provisions of this act shall not apply to, or affect any person who shall be engaged in the retail drug and apothecary business, as proprietor of the same, or as qualified assistant therein, at the passage of this act, except only in so far as relates to registration and fees provided in sections three and four of this act.

A qualified assistant engaged in the business at the passage of this act, is one who has had not less than two years' practical experience in the retail drug and apothecary business. All other assistants actually engaged in the business at the passage of this act shall, upon the completion of a like term of two years experience be entitled to registration as qualified assistants without examination.

SECTION 8. That no person shall be allowed by the proprietor or manager of any store or place where prescriptions are compounded, to compound or dispense the prescriptions of physicians, except under the immediate supervision of said proprietor or his qualified assistant, unless holding a properly certified certificate of registration or competency from the State Pharmaceutical Examining Board as herein provided, and any person violating the provisions of this section shall be deemed guilty of misdemeanor, and on conviction thereof, shall be punished by a fine not exceeding one hundred dollars.

SECTION 9. That no person shall knowingly, willfully or fraudulently, falsify, or adulterate, or cause to be falsified or adulterated, any drug or medical substance, or any preparation authorized or recognized by the

pharmacopœia of the United States, or used or intended to be used in medicinal practice, nor mix or cause to be mixed with any such drug or medicinal substance any foreign or inert substance whatsoever for the purpose of destroying or weakening its medicinal power and effect, and willfully, knowingly or fraudulently sell or cause the same to be sold for medicinal purposes.

Any person who shall violate this section shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not exceeding five hundred dollars, and shall forfeit to the commonwealth all articles so adulterated.

SECTION 10. POISONS. A poison in the meaning of this act shall be any drug, chemical or preparation which, according to standard works on medicine or materia medica is liable to be destructive to adult human life in quantities of sixty grains or less.

No person shall sell at retail any poisons except as herein provided without affixing to the bottle, box, vessel or package containing the same, a label printed or plainly written containing the name of the article, the word "poison," and the name and place of business of the seller, nor shall he deliver poison to any person without satisfying himself that such poison is to be used for legitimate purposes.

It shall be the further duty of any one selling or dispensing poisons which are known to be destructive to adult human life in quantities of five grains or less, before delivering them, to enter in a book kept for this purpose the name of the seller, the name and residence of the buyer, the name of the article, quantity sold or disposed of, and the purpose for which it is said to be intended; which book of registry shall be preserved for at least two years, and shall at all times be open to the inspection of the coroner or courts of the county in which the same may be kept.

The provisions of this section shall not apply to the dispensing of physicians' prescriptions specifying poisonous articles, nor to the sale to agriculturists of such articles as are commonly used by them as insecticides. Any person failing to comply with the provisions of this section shall be deemed guilty of a misdemeanor, and upon conviction thereof, shall be punished by a fine not less than five, nor more than fifty dollars for each and every offense.

SECTION 11. Any graduate of an accredited medical college who has had not less than three years continuous practice since the date of his diploma, and who is registered as a practitioner of medicine and surgery under the act entitled "An act to provide for the registration of all practitioners of medicine and surgery," approved the eighth day of June, Anno Domini one thousand eight hundred and eighty-one, may be registered under this act without examination, and be granted a certificate which shall entitle him to conduct and carry on the retail drug or apothecary business as proprietor or manager thereof, subject to fees provided in sections three and four of this act.

SECTION 12. It shall be the duty of the State Pharmaceutical Examining Board to investigate all complaints and charges of non-compliance or vio-

lation of the provisions of this act, and prosecute all persons so offending, whenever there shall appear to the board reasonable ground for such action.

SECTION 13. That all acts, and parts of acts, so far as they may be in conflict with this, are hereby declared void and of no effect.

Approved by Governor Beaver, May 24, 1887.

MINUTE OF THE COLLEGE MEETING.

PHILADELPHIA, June 27, 1887.

The regular meeting of the members of the College was held this day in the hall, Mr. Robert Shoemaker presiding—fifteen members being present. The minute of the last stated meeting was read and adopted. The minutes of the Board of Trustees for April, May and June were read, and, on motion, approved.

Mr. W. J. Jenks, chairman of the committee appointed to receive and prepare for the entertainment of the members of the Pennsylvania State Pharmaceutical Association, submitted a brief written report, which condensed, represents as follows: "That the programme was fully and successfully carried out in every detail. The evening reception tendered by the members of this College to the visiting members of the State Association, having in addition to its pleasing social features, the instructive aid of an exhibition of the power of the microscope, and illustrations of subjects and objects by the lantern. A vote of appreciation was passed by the State body as acknowledgement of the hospitalities and courtesies extended by the College. The occasion gave opportunity to many to inspect the thoroughly ample educational facilities of the College, and its valuable museum of specimens."

In the absence of the chairman of the committee to represent this College at the recent meeting of the State Association, Mr. Alonzo Robbins gave a verbal report, having reference mainly to the business procedure of the sessions, which continued through three days, and with more than an average attendance, evinced interest in the work of the State body. Numerous papers assigned, and volunteer, were presented, and the accessions to membership were considerably more than one hundred.

The chairman called attention to the recent death of two members of the College, that of William Biddle elected in 1826, who died June 7th in the eighty-second year of his age, thus severing a long and esteemed connection, and closing a most exemplary life; and also that of J. Willits Worthington, which occurred at Moorestown, N. J., June 9th. Mr. W. was made a member of the College in 1872. On motion, the record of these deaths was referred to the appropriate committee.

Prof. Maisch announced the death of an honorary member of the College, Prof. Wittstein, of Munich. A succinct account of the notable periods of his life was given verbally; his eminent and close connection with the advancement of chemical science and research. Prof. Wittstein entered upon the

pharmaceutical study at an early age, beginning his subsequently distinguished career at the lower-most round of fame's ladder.

Mr. Gustavus Pile, of the committee on deceased members, read a prepared memoir of the late W. C. Bakes, which it was explained, had been unavoidably delayed in its presentation by causes beyond control.

Mr. William C. Bakes, who for a number of years was actively connected with this college, died at his residence at Ocean Grove, N. J., August 29th, 1886. Mr. Bakes was born at Liskard, England, January 2d, 1837, and when a mere lad was brought to this country. His father died on the passage over and was buried at sea. He began his career in the drug business as an errand boy in the store of Elias Durand at the S. W. corner of 6th and Chestnut streets, and afterwards became an apprentice to that well known druggist from whom he received much valuable information and careful training. He attended the Philadelphia College of Pharmacy and graduated in 1855.

After graduating he left Mr. Durand and entered into partnership with Mr. DeHaven under the firm name of Bakes & DeHaven. They bought the store at the S. W. corner of 7th and Buttonwood streets from Mr. S. W. Caldwell, and began business, but Mr. DeHaven having no knowledge of the drug business, became dissatisfied and soon retired, withdrawing his capital. In consequence of this Mr. Bakes was unable to retain the place, and he took a position in the store of Prof. Edw. Parrish at the S. W. corner of 8th and Arch streets, where by his attention and ability he rose to the position of head clerk and manager of that well known establishment. About the year 1870 he began business for himself at the S. W. corner of 11th and Arch streets, where he remained for several years. After the death of Mr. Thomas Lancaster, the proprietor of the store at the N. E. corner of 10th and Arch streets, Mr. Bakes removed from 11th street to that place and there continued business. About this time Mr. Bakes opened a store at Ocean Grove, a seaside resort that was then beginning to attract considerable attention, and this venture proving quite successful he abandoned his store in this city and devoted himself entirely to this new place. His business grew with the place and he soon had the satisfaction of seeing the results of his labor in the establishment of a flourishing and profitable drug store, which he continued to enjoy to the time of his decease.

He was one of the founders of the Asbury Park Library Association, and through his efforts the gift to the association of the fine Grant Memorial Window, from Mr. Geo. W. Childs was secured, as well as large donations of money and books from other sources. Mr. Bakes was for many years an active and zealous member of this college, and during that time he won the friendship and good will of all those with whom he was associated. He bestowed a great deal of time and labor for the promotion of the best interests of the institution, and of the whole profession of pharmacy at large.

He contributed from time to time a number of interesting and valuable papers to the AMERICAN JOURNAL OF PHARMACY, and was foremost in the ranks of those who advocated the advancement of knowledge among those

engaged in the practice of pharmacy. Mr. Bakes was elected as secretary of the Board of Trustees on April 4th, 1872, which position he faithfully filled till the time of his last illness, always receiving the warmest regard from all the members of the board. The Pharmaceutical Examining Board was established by law in 1872, and Mayor Stokley appointed Mr. Bakes as one of its members, which position he held for several years.

Mr. Bakes was an influential member of the Trinity Methodist Episcopal Church before its removal from the old edifice, on 8th street near Race, and was also active in the work of the Methodist Historical Society, and other branches of church work. He left a widow and two young sons to mourn his death.

The following gentlemen were nominated, and by viva voce vote elected delegates to attend the meeting of the American Pharmaceutical Association, to be held in Cincinnati, September next: Henry Trimble, Alonzo Robbins, William B. Webb, Wm. J. Jenks, Gustavus Pile, and as alternates, Geo. W. Kennedy, Wm. McIntyre.

In answer to an inquiry it was stated that the Governor of the State had made the appointment of five gentlemen to constitute the Pharmaceutical Examining Board, under the new Pharmacy act. The names of the gentlemen are as follows: Mr. A. B. Burns, H. A. Tafel, H. B. Cochran, F. H. Eggers, and Alonzo Robbins. The terms are consecutively as named for periods of one, two, three, four and five years.

There were some opinions expresssd in regard to the operations of the High License Law of the State of Pennsylvania upon the business of the Pharmacists.

On motion the meeting now adjourned.

WILLIAM B. THOMPSON, Secretary.

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

The Alabama Pharmaceutical Association held its sixth annual meeting at Mobile, May 10th and 11th. Besides routine business, and discussions on various practical subjects, the operation of the pharmacy law claimed much of the attention of the meeting. The number of registered pharmacists in the State was reported to be 215. The newly elected officers are J. B. Collier, president; A. Godden and J. W. Holland, vice-presidents; P. C. Candidus, secretary; and E. P. Galt, treasurer. The next annual meeting will be held at Selma.

The Arkansas State Pharmaceutical Association met in Little Rock, June 1–3. Besides the address of President Bond and the reports of officers and committees, several papers were read, and various subjects of practical interest were discussed, like disguising the bitter taste of quinine, the use of petrolatum in ointments, covering the odor of iodoform, &c. A lengthy discussion on pharmaceutical legislation was had, and the co-operation of the State Medical Society was asked for the purpose of securing a pharmacy law. W. W. Kerr, Batesville, was elected president; J. E. Gibson, Little

Rock, vice-president; J. M. Beidelman, Little Rock, secretary, and E. P. Schaer, Little Rock, treasurer. Hereafter the annual meeting will be held at the time and place of the meeting of the State Medical Society.

The Delaware State Pharmaceutical Association, at a meeting held in Wilmington, May 12th, elected the following officers: H. R. Bringhurst, Wilmington, president; J. G. Bragdon, Middleton, D. J. Burton, Dover, and G. E. Smith, Canvel, vice-presidents: and John M. Harvey, secretary and treasurer. The annual meetings will be held on the first Thursday in May. The place for the next meeting will be announced after further consultation.

The Florida State Pharmaceutical Association was organized at Jacksonville June 8. The first session was held in the hall of the Board of Trade, Henry Robinson presiding. After the organization had been agreed to, and a number of committees appointed, the members went in the afternoon on an excursion by rail to Pablo Beach, and on the following morning proceeded in the steamer, "Seth Low," to the coral banks in the Atlantic Ocean, a session being held on the downtrip. The Constitution and By-laws reported by a committee, were considered and adopted, after which the following officers were chosen: President, Dr. Henry Robinson, Jacksonville; Vice-presidents, W. A. Rawls, Tallahassee, Ed. Delouest, Ocala, and H. C. Cushman, Pensacola; Secretary, Jas. A. Conover, Jacksonville; Treasurer, John M. Dixon, Titusville. A number of standing committees were elected, and delegations to various associations were appointed. The first annual meeting of the association will be held in Tallahassee on the second Tuesday of May, 1888.

The Indiana Pharmaceutical Association met June 7 and 8 at its sixth annual meeting in Richmond, President Leo Eliel in the chair. The president's address, the reports of officers and committees, the reading of a number of practical papers, and the pending pharmacy law formed the chief subjects of discussion. The newly elected officers are Dr. W. C. Bryant, Frankford, president; J. K. Lilly, A. G. Luken and F. Gæsser, vice-presidents; J. R. Perry, Indianapolis, secretary, and W. H. Ross, Richmond, treasurer. The next meeting will take place at Fort Wayne.

The Iowa State Pharmaceutical Association was in session May 11 and 12, at its eighth annual meeting in Waterloo. The president's address, and reports of officers and committees were read and fully discussed, much time being occupied with the discussion on the liquor laws of that State and their effect upon legitimate pharmacy. Prof. Boerner read a paper on the cost of preparations made by the pharmacist; H. Tiarks one on *ointment of zinc oxide*, recommending the use of commercial zinc white; J. H. Atkinson, one on the deficiency of strength claimed for certain elixirs of berberine. The officers elected are: W. C. Bryant, Cedar Falls, president; Jer. Burbank, Denison, I. James, La Porte, and F. W. Brinkhoff, Pella, vice-presidents; Dr. Rosa Upson, Marshalltown, secretary; and C. H. Ward, Des Moines, treasurer. The association adjourned to meet again in Des Moines May 2, 1888; Norman Lichty, local secretary.

The *Kansas Pharmaceutical Association* met at its eighth annual meeting at Wichita, June 8th and 9th, and listened to the address of President Sears, and to the reports of various officers and committees. Several papers were read, nominations for the State board of pharmacy were made, and the following officers were elected: R. S. Drake, Beloit, president: C. Lawrence Wichita, and A. Totten, Osage City, vice-presidents; J. T. Moore, Lawrence, secretary, and C. D. Barnes, Abilene, treasurer. The next meeting will be held at Abilene, May 17, 1888; E. E. Lewis, local secretary.

The Kentucky Pharmaceutical Association held its tenth annual meeting in Louisville, May 18th, President J. W. Fowler in the chair. Besides the president's address, and the reports of officers and committees, a number of papers, practical, statistical and ethical were read and discussed. By a communication from State Auditor Hewitt, the Association was informed that, "under the present law, a druggist can not sell whisky in quantities less than five gallons, for any purpose, without a license; that the officers had been instructed not to enforce the laws rigidly on druggists selling on prescriptions alone; but that they were liable to indictment at any time, unless they procured a license." A large committee was appointed to urge upon the legislature various amendments relating to the practice of pharmacy. The officers elected for the ensuing year are J. W. Fowler, Louisville, president; W. Turner, Bowling Green, W. S. Johnson, Henderson, and G. W. Fitzgerald, Georgetown, vice-presidents; W. B. McRoberts, Stanford, secretary; J. J. Brooks, Richmond, treasurer, and E. Y. Johnson, Louisville, corresponding secretary. The next annual meeting will be held in Henderson on the second Wednesday, May 9, 1888.

The Massachusetts State Pharmaceutical Association held the sixth annual meeting in Holyoke, June 7-9. An address of welcome by the mayor, Dr. O'Connor opened the sessions, at which President Canning's annual address, and the reports of secretary, treasurer, and of the various committees were read. Several papers were presented and discussed, and discussions were had on various practical subjects. The officers elected are J. H. Manning, Pittsfield, president; B. F. Stacey, Charlestown, C. E. Bardwell, Holyoke, and J. A. Rice, Milford, vice-presidents; J. W. Colcord, Lynn, secretary, and T. B. Nichols, Salem, treasurer. A special meeting will be held in Boston in January next, when the time and place of the next annual meeting will be decided upon.

Visits to various factories and an excursion to Mount Nonotuck were made by the members on this occasion.

The Minnesota Pharmaceutical Association met in New Ulm June, 14 and 15, President J. R. Jones in the chair. The address of the president, and the reports of the secretary, treasurer and of the various committees were received, discussed and acted upon, and nominations were made for filling the next vacancy in the pharmacy board. Several papers were read. The new officers are J. P. Allen, St. Paul, president; E. F. Allen, Minneapolis, secretary, and S. E. McMaster, St. Paul, treasurer. The next meeting will take place at Stillwater, June 12, 1888. J. C. Henning, local secretary.

The Mississippi State Pharmaceutical Association convened at its fourth annual meeting in the Senate Chamber in Jackson, May 17. Besides receiving and discussing the usual reports of officers the interest centered in the discussion on the proposed pharmacy law, and on the endeavors to secure for it the support of the members of the legislature, a committee consisting of one member from each county being appointed for this purpose. The officers elected for the ensuing year are: Byron Temly, president; D. E. Holt, vice-president; H. F. West, secretary, and J. B. Dudley, treasurer. The next meeting will take place at Meridian, May 15, 1888.

The New Jersey Pharmaceutical Association met at Paterson, May 18th and adjourned to May 25th for holding its seventeenth annual meeting. President Kilmer read his annual address making a number of recommendations which were favorably reported upon by a committee and then approved by the association. The Pharmacy Board gave an account of the work during the past year and paid over to the association $162 received in excess of the expenditures. The total number of registered pharmacists in New Jersey is 1380, of whom 129 had been added during the year, 83 being graduates in pharmacy; of those examined by the Board only 36 per cent. succeeded in passing. A number of interesting papers were read, among them, two by Aug. Drescher urging pharmacists to qualify as analysts with the view of not only determining the purity and quality of medicines prepared and dispensed by them, but also for undertaking the examination of food and for toxical analysis. Other papers treated of botanical subjects, the preparation of galenicals, &c. A series of resolutions were adopted urging the restriction of the sale of liquors by pharmacists to their use as medicinal agents, and in the case of alcohol to its use in chemical, mechanical and household arts.

The new officers are G S. Cook, Somerville, president; G. H. White, Jersey City, and R. J. Shaw, Plainfield, vice-presidents; F. B. Kilmer, New Brunswick, secretary, and Wm. Rust, New Brunswick, treasurer. The next meeting will be held in Morristown, May 23, 1888.

During the meeting the falls of the Passaic and a number of the industrial establishments of Paterson were visited by the members.

The Ohio State Pharmaceutical Association held its ninth annual meeting in the Council Chamber, in Akron, June 8th and 9th, President Coblentz in the chair. The annual address of the president and the reports of the secretary, treasurer, the various committees and of the State board of pharmacy claimed the attention of the meeting. During the past year the State Board examined 225 and passed 102 (48 per cent.) as pharmacists; also examined 136 and passed 48 (35¼ per cent.) as assistants.

Amendments to the by-laws were proposed, creating a committee on adulterations, and making members life members on the payment of $10. The following officers were elected: S. E. Allen, Akron, president; M. D. Fulton, Bucyrus, and G. W. Voss, Cincinnati, vice-presidents; L. C. Hopp, secretary, and Chas. Huston, treasurer. The next meeting will be held in Columbus on the second Tuesday (13th) of June, 1888; H. C. Cook, local

secretary. Nominations were also made for the pharmacy board. Among the papers read the following are mentioned:

Sulphate of morphine, by P. I. Spenzer, treating of the quality of the commercial salt.

Black oxide of manganese, by S. W. McKeown. The commercial oxide was found free from adulteration.

Pressed herbs, by Jos. Feil. The quality is generally good, and in some cases better than that of commercial loose herbs.

The handwriting on the wall, by Prof. J. U. Lloyd. The writer thought it was useless to try to block the wheels of progress and stick to old ideas of pharmacy; it was no use to rebel against the innovations of new ways of carrying on the trade and no one ever did so but to find himself suddenly isolated from the modern druggists.

Solution of ferric citrate, the quality of commercial powdered opium, and the amount of resin in commercial jalap and powdered jalap, formed the subjects of other papers.

The Pennsylvania Pharmaceutical Association assembled at its tenth annual meeting in the museum of the Philadelphia College of Pharmacy, June 14-16, President Jas. A. Meyers in the chair. The Director of Public Works, General L. Wagner, representing Mayor Fitler, extended a welcome to the association on behalf of the citizens. Vice-president Wm. J. Jenks extended the hospitalities of the College, and Dr. A. W. Miller those of the Drug Exchange. The President's address referred to the pharmaceutical literature of the past year, and spoke of the pharmacy law recently passed by the legislature, and of the high license law with its effects upon those druggists who have made the sale of intoxicants a prominent feature of their business. In discussing the affairs of the association, various suggestions were made which were referred to a committee, and subsequently reported back, somewhat modified, and adopted. Owing to various large expenditures during the year, the treasurer's balance amounted only to $38.74. The membership of the association was reported to be 506, besides 6 honorary and 19 associate members. During the meeting 122 new members were elected.

The report of the Committee on Legislation created considerable discussion on the new pharmacy law, which totally ignores pharmaceutical education; section 11 was more particularly criticized, and the sentiment of the Association was expressed in the adoption of the following resolution offered by Mr. C. T. George:

Resolved, That it is the sentiment of the association that Section 11, of the Pharmacy law, is not in the interest of pharmaceutical education, and that, inasmuch as physicians have neither the training nor education of pharmacists, they should not be permitted to practice pharmacy without having passed a satisfactory examination before the State Board of Pharmacy, and that the repeal of Section 11 be referred to the Committee on Legislation, with instructions to have the same repealed as soon as possible.

The Committee on County Societies reported the formation of four new societies during the year, making thirteen in all. The Committee on Adulterations reported on the observations communicated to them, and without

suggesting some definite course, urged the adoption of measures for preventing the adulteration of drugs and of food. In connection with this subject Prof. Maisch exhibited a specimen of *false serpentaria*, samples of which he had repeatedly received from different parts of the country during the past ten years, without being able to trace it to its source, until about a year ago Prof. Coblentz, of Springfield, Ohio, succeeded in procuring the plant which proved to be *Polemonium reptans*; in size and shape it resembles serpentaria, but is easily distinguished from this by the white color.

Acting upon a suggestion in the President's address, the Association directed the appointment of a committee of five to visit the Pennsylvania Medical Society at its meeting in Bedford Springs, June 29, and present resolutions, soliciting the aid and co-operation of that association in promoting the prescribing by physicians of officinal medicines only, or of preparations the working formula of which is known; also inviting the Medical Society to send delegates to the meetings of the Pharmeceutical Association.

The officers elected for the ensuing year are: President, William L. Turner, of Philadelphia; Vice-presidents, William Harris, of Hamburg, John W. Miller, of Allegheny; Treasurer, J. L. Lemberger, of Lebanon; Secretary, Jacob A. Miller, of Harrisburg. Charles D. Lippincott was elected assistant secretary, and the Association finally adjourned to meet next year in Titusville, Crawford Co., on the second Tuesday of May.

Three of the papers read during the sessions we are enabled, through the courtesy of the authors, to publish in the present number. Several papers were of a statistical nature, or treated of general subjects not capable of being presented in a condensed form; but of the following we give brief abstracts:

Hydrometer scales, by Gust. Pile.—While the principles are well known upon which hydrometers are constructed, the manner, in which the scales attached thereto are ruled, is not generally known. In cases where the divisions are uniform, a determination of two points and sub-division of the space into the requisite number of parts may be made; but those scales requiring marks which are not equidistant, must be prepared in a different manner. Charts are prepared for each kind, the sub-divisions being carefully determined by experiment and calculation for different lengths of the entire scale, and then united by straight lines which obviously diverge uniformly from the shortest to the longest scale. Three or four or a larger number of points are then determined upon the new instrument, and by sliding this trial scale along the chart until the different points, thus determined, coincide with the proper degrees on the standard chart, the remaining sub-divisions are readily indicated.

Water, its uses and abuses in Pharmacy, by J. L. Lemberger.—For all medicinal preparations the use of *distilled* water is urged in preference to water from other sources. The abuses of water in pharmacy are found in its unwarranted use for diluting a menstruum or a medicinal liquid.

Linimentum ammoniæ, by Prof. J. P. Remington.—The U. S. P. formula, which directs cottonseed oil, yields a liniment, which readily separates into

two layers; the addition of a little alcohol will materially lessen, but not entirely prevent the separation. Commercial olive oil which was formerly directed, consists now mainly of cottonseed oil mixed with some olive oil, and, therefore, cannot be recommended for this preparation. A creamy white homogeneous liniment, which does not change in several weeks, is obtained by using ammonia water, 30 parts, and lard oil, 70 parts.

Medicated plasters with rubber, by Dr. J. J. Edmondson.—The addition of solutions of caoutchouc to plaster masses does not improve their adhesive qualities. A good stock plaster suitable for most purposes is obtained from Burgundy pitch and olibanum, of each 1 part, and prepared caoutchouc 2 parts. For obtaining the latter, the crude rubber of the market is steeped in hot water, crushed between corrugated rollers, washed with water, dried and softened by pressing it between smooth rollers, when the other ingredients mentioned may be incorporated with it, which operation likewise requires the use of heavy machinery. This rubber stock is regarded as superior to lead plaster as a base, and may be mechanically mixed, by means of iron rollers, with resins, extracts, etc. The spreading of these plasters is likewise best done with the aid of rollers.

Commercial castile soap, by Prof. Remington.—Four brands of white and one of mottled castile soap were examined; no insoluble substances worth noting were found, the latter variety, however, containing the largest percentage. The moisture varied between 15·6 and 22·9 per cent., the average being 18·01 per cent.

Commercial lupulin, by John H. Hahn.—The amount of ash found in eight samples was 5·0, 6·0, 14·12, 16·24, 19·34, 22·17, 23·40 and 25·33 per cent. Two samples only come within the pharmacopœial requirement of yielding not over 8 per cent. of ash, the impurity in the other samples being sand.

Conium fruit in Italian anise, by C. L. Lochman.—During the past eight years Italian anise was repeatedly sowed, and invariably yielded, in part, a crop of Conium maculatum, apparently equivalent to between two and five per cent. of the commercial article.

The author had sent some of the conium plants thus obtained, which were in bloom, with the fruit partly developed. German anise had never yielded conium plants when planted by the author, who naturally concluded that *all* Italian anise is more or less contaminated with conium fruit. To test this conclusion Dr. C. B. Lowe procured from two wholesale houses samples of Italian anise in stock, and from both small quantities of conium could be picked out on careful examination.

Peppermint industry, by Dr. W. M. Weills.—The paper gives an account of the cultivation of the peppermint plant in the United States and the production of the volatile oil and of menthol.

The ladies and many of the visiting members made excursions up the Schuylkill and to Fairmount Park, and visited the Zoological Garden, Girard College, the German Hospital, and other public institutions and buildings. On Wednesday evening, June 15, the Philadelphia College of Pharmacy tendered a reception to the visitors, the entire building being opened for their inspection; in one of the rooms a microscopic exhibition had been

prepared by Mr. A. P. Brown, assisted by his pupils of the alumni microscopical class, and in one of the lecture rooms the members of the faculty gave a varied exhibition by means of the oxy-hydrogen lantern, while in the museum refreshments and music had been provided for the party. After the adjournment, on Friday, the druggists and allied trades of Philadelphia tendered a steamboat excursion to the visitors, about 500 persons participating. The steamer Columbia left Chestnut street wharf and proceeded down the Delaware to the mouth of the Schuylkill and up the river to Bristol. Music was furnished for the occasion by Beck's Band.

The Texas State Pharmaceutical Association convened at its eighth annual meeting in Fort Worth May 10th–12th. In the absence of the presiding officers, Mr. E. D. Oesch was elected president *pro tem.* The president's address and reports of officers and committees were read and discussed, and several papers on various pharmaceutical subjects were contributed. The pharmacy bill and the causes of its repeated failure in the legislature were fully discussed, and a committee was appointed to bring the measure again before the legislature and urge its passage. The officers elected for the ensuing year are E. M. Wells, Fort Worth, president; F. J. G. Zethræus, Paris, H. L. Carlton, Brenham, and N. M. McConnell, Jacksboro, vice-presidents; E. W. Lancaster, Marshall, treasurer; E. D. Oesch, Fort Worth, secretary; and O. Samostz, Austin, local secretary. The next meeting will be held in the city of Austin, May 8,1888.

The *Virginia State Pharmaceutical Association* convened at its sixth annual meeting in Richmond, May 10th to 12th. The president's address and the reports of officers and committees were received and discussed. A committee was appointed for the purpose of conferring with a similar committee of the Virginia Medical Association in regard to the mutual relations between pharmacists and physicians. After a lengthy discussion on the pharmacy law it was decided to petition the legislature to so modify the law as to separate the creation of the pharmacy board from the act of incorporation of the Association. The newly-elected officers are Rob. Brydon, Danville, president; E. R. Beckwith, J. H. Jeffries, W. Budwell, and J. H. Waite, vice-presidents; F. H. Masi, treasurer; C. B. Fleet, Lynchburg, secretary, and T. Roberts Baker, corresponding secretary. The next meeting will be held at Danville, May 1st, 1888.

The West Virginia Pharmaceutical Association convened at its seventh annual meeting in the court house at Grafton June 8, President J. A. Grant in the chair. Words of welcome were spoken by Hon. B. F. Martin. The president delivered his address, and the secretary, treasurer and the different committees made their reports. Resolutions were passed favoring the enactment of a more stringent pharmacy law; requesting the present vacancies in the pharmacy board to be filled, and urging the assessment of a tax of $10 on all persons dealing in medicines and not registered as pharmacists. The officers elected for the ensuing year are W. C. McWhorter, Buckhannon, president; J. Morrow, Weston, vice-president, and C. Menke-

meller, Wheeling, secretary and treasurer. The next meeting will be held at Clarksburg June 19, 1888.

The Tennessee Pharmaceutical Association held its second meeting in Nashville May 11. The address of President Gordon, the reports of the different officers and committees, and discussions on legislation and other subjects occupied the attention of the members. R. A. Sloan, Chattanooga, was elected president; D. L. Goodyear, Memphis, and J. A. McCampbell, Knoxville, vice-presidents; J. L. Thompson, Nashville, secretary, and E. L. Laurent, Nashville, treasurer.

EDITORIAL DEPARTMENT.

Pharmaceutical Legislation in Pennsylvania.—In another place we print the full text of the new pharmacy law, from a copy that had been obtained from the office of the Secretary of State. By referring to section 11 and comparing the same with our remarks on page 317 of the June number, it will be observed that registered practitioners of medicine are permitted to be registered as pharmacists after three years continuous practice—*not* practice in pharmacy as we had supposed—and, consequently that objectionable section does not contain even the mitigating feature we supposed it did, and which alone could give an apparent justification for the admission of the section. The action of the Pennsylvania Pharmaceutical Association, demanding its repeal, is proper and just, and should be complied with by the Legislature at its earliest opportunity, in the interest of the public, of medicine and of pharmacy alike.

The appointments for the Pharmaceutical Examining Board have been made by Governor Beaver, as follows: Alonzo Robbins of Philadelphia, for five years; Frederick H. Eggers, of Allegheny City, for 4 years; Harry B. Cochran, of Lancaster, for 3 years; H. A. Tafel, of Philadelphia, for 2 years, and A. B. Burns, of Susquehannah County, for 1 year. The three first named gentlemen are members of the Pennsylvania Pharmaceutical Association, and are fairly representative pharmacists of the State. We learn that Mr. Burns is a man of considerable pharmaceutical experience since the civil war, in which he is stated to have served as hospital steward. Mr. Tafel is a member of the firm of Boericke & Tafel, homœopathic pharmacists; it is possible that his appointment may be due to the fact that a homœopathic pharmacy bill had been passed by the Legislature, but was vetoed by the Governor in view of the enactment of the general pharmacy law, which makes no distinction between different pharmaceutical systems or creeds.

In connection with pharmaceutical legislation in Pennsylvania, it is proper to record also the clause relating to druggists and apothecaries, in the high license law enacted by the Legislature and approved by the Governor. This clause is more liberal and just than analogous laws in some other States, and while a certain ambiguity is noticeable, we think that a fair construction of the provisions concedes to the public every reasonable demand upon the apothecary for the supply of medicines and alcohol, but

forbids the sale of non-medicated liquors except upon a physician's written order. The section is as follows:

SECTION 17. That druggists and apothecaries shall not be required to obtain a license under the provisions of this act, but they shall not sell intoxicating liquors except upon the written prescription of a regularly registered physician; alcohol, however, or any preparation containing the same, may be sold for scientific, mechanical, or medicinal purposes. Any one violating the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof shall be subject to the same penalties as are provided in the 15th section of this act; provided that no spirituous, vinous, malt or brewed liquors shall be sold or furnished to any person more than once on any one prescription of a physician; and provided further that any physician who shall wilfully prescribe any intoxicating liquors as a beverage to persons of known intemperate habits, shall be guilty of a misdemeanor and upon conviction thereof shall be subject to the same penalties and fines as are prescribed in section 15.

Correction.—June number p. 305, line 19 top, for .858 read .853.
p. 311, " 2 " +4 " +44.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Handbuch der praktischen Pharmacie für Apotheker, Drogisten, Aerzte und Medicinal-Beamte. Von Dr. Heinrich Beckurts, Professor an der herzogl. & technischen Hochschule in Braunschweig, und Dr. Bruno Hirsch, Apotheker in Frankfurt am Main. Stuttgart: Ferdinand Enke, 1887. 1 und 2 Lieferung. 8vo.

Hand book of practical pharmacy for apothecaries, druggists, physicians and medical officers. By Prof. Dr. H. Beckurts and Dr. Bruno Hirsch, apothecary. Fascicles 1 and 2; each 96 pages. Price 2 marks each.

The object of this work is the presentation in a clear and logical manner of the requirements of the modern pharmacist who aims at thorough information in all branches of his profession. Starting with an exposition of the scope of modern pharmacy, the authors find its main obligation in the acquisition of accurate knowledge concerning all medicinal substances according to composition, properties, chemical and physical behavior, examination and valuation, in addition to the rational preparation of the medicaments. While the ideal of modern pharmacy, as far as the galenical preparations are concerned, is the exact determination of the active principles, in most cases reliable and exact methods for such valuations are still unknown; and the pharmacist is therefore in duty bound to prepare himself, from drugs of undoubted quality, powders, extracts, tinctures and such other medicaments, for which the control by means of chemical and microscopical examination is still uncertain. A wide field is open for scientific pharmacy in the anatomical examination of drugs, the elaboration of methods for exact valuation, the determination of causes of deterioration, and in researches on the proper preservation of the various medicaments; obviously the technical operations must not be neglected, such as improvements in apparatus, manipulation, dispensing, and in the conversion of medicinal substances into agreeable and therapeutically active forms. Forensic chemistry and public hygiene are likewise fields which naturally fall within the scope of the thoroughly educated pharmacist.

The book opens with the arrangements of the pharmacy for business purposes: the officine, laboratory, store room, &c. The various pharmaceutical, chemical and physical operations are next considered and fully described in all their bearings, illustrated by many excellent wood cuts, and containing numerous practical hints and observations based on the extended practical experience of the authors.

The two fascicles now before us constitute about the seventh part of the entire work, the publication of which will be completed in the course of a year, and give promise that the work will be thoroughly accomplished, comprehensive in scope, convenient in arrangement, precise and clear in diction, and reliable and instructive in detail, thus deserving a prominent place in the pharmaceutical library.

A Compend of Pharmacy. By F. E. Stewart, M. D., Ph. G., &c. Second edition, thoroughly revised. Philadelphia: P. Blakiston, Son & Co., 1887. 12 mo. pp. 184. Price $1.

The first edition of this little work was noticed in our June number last year. In preparing the second edition, it has been revised, and in our opinion, considerably improved. Its value as a note-book by students, we think, would be enhanced by interleafing for the purpose of making additions.

Elements of Botany, including organography, vegetable histology, vegetable physiology, and vegetable taxonomy, and a glossary of botanical terms. Illustrated by nearly 500 engravings from drawings by the author. By Edson S. Bastin, A. M., F. R. M. S., Professor of Botany, Materia Medica and Microscopy in the Chicago College of Pharmacy. Chicago: G. P. Engelhard & Co., 1887. 8 vo. pp. 282. Price $2.50.

In writing this book Prof. Bastin has supplied a want which we have long felt—a book which may be put into the hands of the student, without causing undue bewilderment, and which would contain the essential facts ascertained in the vast domain of botany, without branching off into variations and details that would become confusing to the beginner, though of importance to the naturalist.

The arragement of the various branches is indicated in the title; the descriptions and explanations are, as a rule, full and exact, and devoid of tediousness, rarely vague. The plants chosen as examples are characteristic and mostly readily obtainable, and the numerous cuts will serve the purpose for which they have been designed. The book deserves to be put into the hands of the student, and if intelligently used by him, will prove a very valuable aid.

That the publishers have made the book inviting by the employment of clear types, good paper and attractive binding is an additional recommendation.

Lectures on Botany and Materia Medica, and on Chemistry. By C. S. Hallberg, Ph. G., Chicago. 4o. Pp. 196.

This publication is designed to furnish those preparing for the examinations before pharmaceutical boards with a synopsis of the sciences named

as applied to pharmacy. It is intended to be sent out every two or four weeks in parts sufficient to be studied in that space of time, thus securing a systematic reading. While any other good work on the same subjects could be used equally well, the advantage is connected with the one before us, that the student is expected to communicate with the author on all points not fully comprehended, and in return receive further explanations; moreover the student is examined—by correspondence—on the subjects previously read, by which means deficiency may be pointed out.

This system of teaching has been previously tried in other departments, and may be considered as a suitable aid where oral instruction cannot be had. To be profitable to the student, it presupposes familiarity with the outlines of the sciences, or at least a well trained mind capable of assimilating knowledge, and not merely accustomed to crowding the memory with isolated facts; such students, after perusing the lectures, will find an additional incentive for seeking further instructions in a good educational institution.

The Physician's Dose and Symptom Book, containing the doses and uses of all the principal articles of the materia medica and officinal preparations, arranged in alphabetical order; also tables of weights and measures, rules to proportion the doses of medicine, common abbreviations used in writing prescriptions, alphabetical list of materia medica, preparations and mode of administration, list of incompatibles, hints on prescription writing, table of poisons and antidotes, hints on treatment and table of symptoms. By Jos. H. Wythe, M. D., Prof. of histology and microscopy, Cooper Medical College, San Francisco, &c. Seventeenth edition, completely rewritten and enlarged. Philadelphia: P. Blakiston, Son & Co., 1887. 32 mo. pp. 226. Price, cloth $1.

That this little book has been found useful may be judged from the fact that it has passed through so many editions. The present one has been rewritten to a considerable extent, and on the whole will be found reliable. The non-pharmacopœial articles are marked with an asterisk (*) in the materia medica list, but not in the list of preparations, and since the book is intended to cover both the British and United States Pharmacopœias, the figures given for the preparations should be accompanied by the authority in all cases where the difference in strength is notable. Under the head of infusions for instance are found formulas of the present and preceding U. S. and Br. pharmacopœias, the infusion of digitalis being that of Br. 1867 and the much stronger preparation of the U. S. P. is not indicated. In the materia medica list the names of the different articles are usually in Latin, but inconsistencies are met with like the following: ammoniated iron, ferrum dialysatum, arseniate of ammonium, sodii arsenias, &c. A number of typographical errors in spelling and accentuation have been overlooked by the proofreader.

The doses have been stated with great care, and with the useful information collected together in the various tables in a very compact form, insure the utility of the little volume to physicians as a handy work of reference on those points.

Public Health. The Lomb Prize Essays, award made at the thirteenth annual meeting of the American Public Health Association, Washington, D. C., December 10, 1885, with an appendix. Second edition, Concord F. H., 1886. 8 vo. pp. 198.

We acknowledge the receipt of this handsome and instructive volume, which contains the following four essays:

I. Healthy Homes and Foods for the Working Classes; by Prof. Victor C. Vaughan, of Ann Arbor.

II. Sanitary Conditions and Necessities of School Houses and School Life; by Dr. D. F. Lincoln, of Boston.

III. Disinfection and Individual Prophylaxis against Infectious Diseases; by Dr. G. M. Sternberg, Surgeon U. S. A.

IV. Preventable Causes of Disease, Injury and Death in American Manufactories and Workshops; by Geo. H. Ireland, of Springfield, Mass.

These interesting and important essays should become widely known, and we are pleased to learn that the Association is enabled to furnish them to those interested at the cost of printing and postage, viz.: single essays, 10 cents; any two of them, 15 cents; the four bound in cloth, 65 cents, and the same printed on extra heavy paper and well bound, $1. They may be procured from the Secretary, Dr. Irving A. Watson, Concord. N. H.

Report of the Committee on Disinfectants, presented at the fourteenth annual meeting of the American Public Health Association, held at Toronto, Canada, October 5-8, 1886. Concord, N. H. 8vo. pp. 33.

A reprint from vol. xii of the Transactions of the above-named association. The report describes a number of apparatus which have been designed for disinfecting purposes, the construction and application being illustrated by 37 cuts.

Foods and Food Adulterants. Part I. Dairy Products, Washington: Government Printing Office. 1887. 8vo. pp. 132.

This is bulletin 13 of the Division of Chemistry, U. S. Department of Agriculture. It treats of butter, milk, cheese, and similar products, their qualities, deterioration, adulteration and fraudulent substitution, and enters fully into the various methods proposed for their analysis; it contains twelve plates prepared from photographs taken with the aid of the microscope, and illustrating the appearance under various conditions of butter and different fats:

New Treatment of the Affections of the Respiratory Organs and of Blood Poisoning by Rectal Injections of Gases, after the Method of Dr. Bergeon. By Dr. V. Morel. Translated from the French by L. E. Holman. Philadelphia: J. W. Queen & Co. 8 vo. pp. 21. Price, 25 cents.

Twenty-sixth Annual Report of the Board of Managers of the Woman's Hospital of Philadelphia. 1887, pp. 38.

Seventieth Annual Report of the state of the Asylum for the Relief of Persons Deprived of the Use of their Reason. Philadelphia, 1887. pp. 28.

Untersuchungen über die Darstellung und Eigenschaften des Inosit, sowie über dessen Verbreitung im Pflanzenreiche. Von Richard Fick.

Researches on the preparation and properties of inosit, and the distribution of the same in the vegetable kingdom. (Dorpat Dissertation).

The author showed the presence of inosit in a large number of plants; it exists, however, always in such minute proportion that it cannot be a prominent factor in vegetable physiology. Climbing plants like aristolochia, ampelopsis, humulus, vitis, pisum and phaseolus, contained considerably more inosit than the other plants examined.

Der Kohlensäure-Gehalt der Luft in Dorpat bestimmt in den Monaten Februar bis Mai, 1887. Von Victor Feldt.

The amount of carbonic acid of the air in Dorpat, determined during the months of February to May, 1887. (Dorpat Dissertation.)

The large number of determinations seem to indicate that, with the wind from west and southwest, the air contains a smaller amount of carbonic acid, while the largest amount was found with the direction of the wind from the northeast.

Des Poisons de Flèches et d'Épreuve en général, et de l'inée en particulier. Par Gaston Fontaine, pharmacien de I. classe.

On arrow poisons and ordeal poisons in general, and on inée (strophanthus) in particular. (Thèse, Montpellier.)

We hope to give a condensed account of this thesis in a subsequent number.

Programme of the Sixth International Congress for Hygiene and Demography.

The documents (in French and English) are addressed to boards of health, educational institutions, societies, managers of hospitals, &c. The Congress will be held in Vienna, Austria, September 26 to October 2, 1887. Applications for subscription cards of delegates at 30 florins are to be addressed to the Commission on Organization, I, Renngasse 50, Vienna.

Tracts on Massage, No. III. The Uses of Massage in Medical Practice. Translated from the German of Reibmayr, with notes by Benjamin Lee, A. M., M. D., Ph. D., etc. Philadelphia: 1887. Published by the Author. Price, 25 cents.

An essay of forty-four pages, to which has been added another of twenty two pages on "Blood, and how to make it; Fat, and how to reduce it."

A fatal result from thalline is reported by Prof. Ehrlich (*Münch Med. Wochenschr.*), after giving the thalline tartrate in progressive doses from ·08 to ·58 gm. He suggests 0·2 gm. (griij) as the maximum dose for hourly administration, commencing with 0·08 gm. and increasing the dose daily by 0·01 gm.

OBITUARY.

Georg Christoph Wittstein died at his residence in Munich, June 2, in the seventy-eighth year of his life. Born in Münden, Hannover, January 25th, 1810, he received his education at the classical school (gymnasium) of his native city, with which his father was connected as teacher of mathematics. At the age of 14 he entered upon his apprenticeship lasting five years, was then assistant in Clausthal, Güstrow and Hannover, passed in the latter city in 1834 the state's examination, and in the fall of 1835 went to the University of Munich to further pursue his studies. While a student here he was awarded (Aug. 12, 1836) the prize (33 florins) offered by the Society of Pharmaceutical Students in Munich, for an essay on the influence of ammonia and ammonium salts upon the solubility of, in water insoluble, oxides and salts. The judges in their report stated, among other things, that, although temperature, concentration and quantitative proportions had not been sufficiently considered, yet the researches had evidently been made by a thinking, well-informed young chemist, from whose diligence science might expect much enrichment in the future. This prediction has been well fulfilled by a long, industrious and useful life. After obtaining the degree of doctor of philosophy, he remained with Professor J. A. Buchner for fourteen years as his assistant and superintendent of the chemical laboratory. In 1851, he accepted a call as professor of chemistry, technology and natural history to the district school and agricultural institute at Anspach, but after two years returned to Munich, where he has since resided and labored for many years as private teacher and analyst.

His first literary work was an essay on impurities in commercial zinc and zinc sulphate, published in 1836 in *Buchner's Repertorium* lv, and his first critical review of a book appeared in the following year (*ibid.* lxi). During the following nearly forty years these labors were continued, since the beginning of 1852 in the "Vierteljahres-Schrift für practische Pharmacie," which periodical he conducted for twenty-two years. Aside from his journalistic labors Professor Wittstein was also engaged in other literary works, two of which have been translated into the English language; one on Practical Pharmaceutical Chemistry in 1853 by L. Darby, and the other on the Organic Constituents of Plants, more recently, by Baron von Müller. In the German language there were also published from his pen an etymological botanical dictionary; qualitative chemical analysis (1851); outlines of chemistry (1852); refutation of the theory of chemical types (1856); secret nostrums (4. edit. 1876); articles of food and drink (1878); compendium of chemicals (1879); translation of Plinius' natural history (1880--1882); pharmacognosy of the vegetable kingdom (1882), and general indices to several serial publications.

The deceased was an honorary member of the American Pharmaceutical Association, the Philadelphia College of Pharmacy and of other pharmaceutical societies of America.

Methodical, careful and painstaking as an investigator; clear, accurate and reliable as an author; just and sincere, though occasionally too severe and

harsh, as a critic—thus may be summed up, in our opinion, the causes for the intrinsic value of Wittstein's scientific labors, carried on unceasingly through half a century—an example of industry and usefulness, well worthy of emulation by the young pharmacists of the present generation.

J. Willits Worthington, PH. G., died in Moorestown, N. J., June 9, 1887. He was a native of Philadelphia, learned the drug business with Dr. S. Mason McCollin, graduated here in 1871 and was in business in Moorestown, for a few years also in Philadelphia.

VARIETIES.

Phosphate of calcium in the night sweats of phthisis.—According to Dr. Rebory, there can be no doubt that this salt has a special effect on the secretions, although the mode of its action is obscure. It has the advantage of not being at all poisonous, is easily administered, is well borne by the stomach, stimulates nutrition, and prevents diarrhœa.—*Brit. Med. Jour.*

Peroxide of hydrogen has been used by Dr. B. W. Richardson, (Asclepiad No. 13), in whooping cough with favorable results, the disease being cut short quickly and determinately. It was prescribed as follows:

Hydrogen peroxide (10 vols. strength)	℥vj
Glycerin	℥iv
Distilled water sufficient for	℥iij

Dose half a fluidounce to be taken in a wine glass full of water.

Digitalin.—Ph. Lafon, reaches the following conclusions, as a result of his study of this substance:

(1) Digitalin is absorbed slowly. (2) It is not eliminated by the kidneys. It could not be detected in the urine. (3) It does not appear to localize itself, at least, in the form of digitalin, in any particular organ, either in acute or slow poisoning. It is not cumulative. (4) It is not sensibly modified in the digestive apparatus. It appears to undergo a complete transformation in the circulation. This change is probably effected by some oxidizing agent. (5) Digitalin offers a relatively great resistance to both physical and chemical agencies, to various ferments, and to putrefaction.—*Boston Med. Surg. Jour.* April 7, 1887; *Jour. Phar. Chim.* Jan. 1887.

Iodol in ear diseases.—Dr. Stretter, who has used iodol, the new inodorous substitute for iodoform, in a large number of cases of ear disease, finds that in acute purulent inflammatory affections iodol applications rapidly produce marked benefit, but that in chronic inflammations of the middle ear it is generally quite useless, or at best, no better than other more common methods of treatment.—*Am. Pract. and News.*

Use of salol.—Kleefeld, of Görlitz, reports from his clinic the following results obtained by the use of this drug. His use extended over a period of three months, and in thirty-five cases of rheumatism and varying forms of neuralgia he obtained the best results. There followed no ill after-effects from its administration; ringing in the ears occurred infrequently and was not severe.—*Med. News*, Febr. 19, 1887. See also AMER. JOUR. PHAR. 1886, pp. 380, 521, 552.